# Reviewing Pool Plans

Basic Swimming Pool Plan Review and Pipe Calculations Training

# Items You Will Need

- Pool Plans and Equipment Specifications
- Pool Rules – Office Administrative Hearings Website

http://reports.oah.state.nc.us/ncac.asp?folderName=%5CTitle%2015A%20-%20Environmental%20Quality%5CChapter%2018%20-%20Environmental%20Health

- Calculator and Architect's Scale
- Flow Chart for Schedule 40 Pipe – Velocity
- Highlighters (3 or 4 different colors)
- NSF.org

# Items You Will Need

- Pool Plan Review Checklist
- Drain safety data sheet
- Plan review calculations sheet

# What Should Plans Include?

- Rule .2509 states the plans shall be prepared by a "registered design professional", which is either a:
  - NC Professional Engineer (P.E.), or a
  - NC Registered Architect
- Two complete sets of plans shall be submitted
  - Minimum size (18 x 24 inches)
  - Maximum size (36 x 42 inches)
  - Plans shall be drawn to scale
  - Plans shall include specifications

# Quiz time?

- What about landscape Architects?

# What Should Plans Include?

1. Plan and sectional view dimensions of both the pool and the area enclosed by the barrier fences to include the bathhouse and the equipment room and pool accessories
2. Specifications of all treatment equipment used and their layout in the equipment room
3. A piping schematic showing piping, pipe size, inlets, main drains, skimmers, gutter outlets, vacuum fittings and all other appurtenances connected to the pool-piping system

# What Should Plans Include?

4. Layout of the chemical storage room
5. Specifications for the water supply and wastewater disposal systems that include aspects such as well location and backwash water disposal where applicable.

# Pool Plan Review Deadline

- The Department shall approve, disapprove, or provide written comments on plans and specifications for public swimming pools **within 30 days of their receipt**.

*If such action is not taken within 30 days, the plans and specifications shall be deemed approved.

# What To Do First?

- Complete the Drain Safety Data Sheet first.
- Next, complete the calculations sheet.
- Finish with the Pool Plan Review Checklist – Look for each of the checklist items on the plans. Determine if the items meet the rules.
- If items don't meet the rules – they will need to be addressed in the letter to the engineer or architect.

# What To Do Next?

- If some specifications are not included, try to complete as much of the checklist as possible, list missing items for letter.
- Contact the engineer or architect to send the necessary specifications.
- If specifications can't be obtained quickly – send a disapproval letter indicating the specifications that are needed to complete the plan review.

# Reviewing the Plans

- Once you have completed the calculations and checklist, you have the information that you need to write an approval or a disapproval letter. Items you have "flagged" will be the items you list in your letter.
- In some cases, you may have only minor items flagged that can be communicated as conditions in an approval letter. (You can also include reminders.)

# Important Things to Remember

- There have been some changes in the rules since 2010 that you need to be aware of when reviewing plans.
  - Open-pipe inspection - .2509(e)
  - Pool finish (use artist gray scale or reflectance testing to determine if finish is light enough) - .2514 (c)
  - Sun shelves - .2515 (b) – connect to pool with stairs or properly sloped floor.
  - Skimmer piping (after 5/1/2010) shall be sized to handle the maximum flow rate for the required number of skimmers, but in no case less than 100 percent of the design flow rate - .2518 (c)

# Important Things to Remember

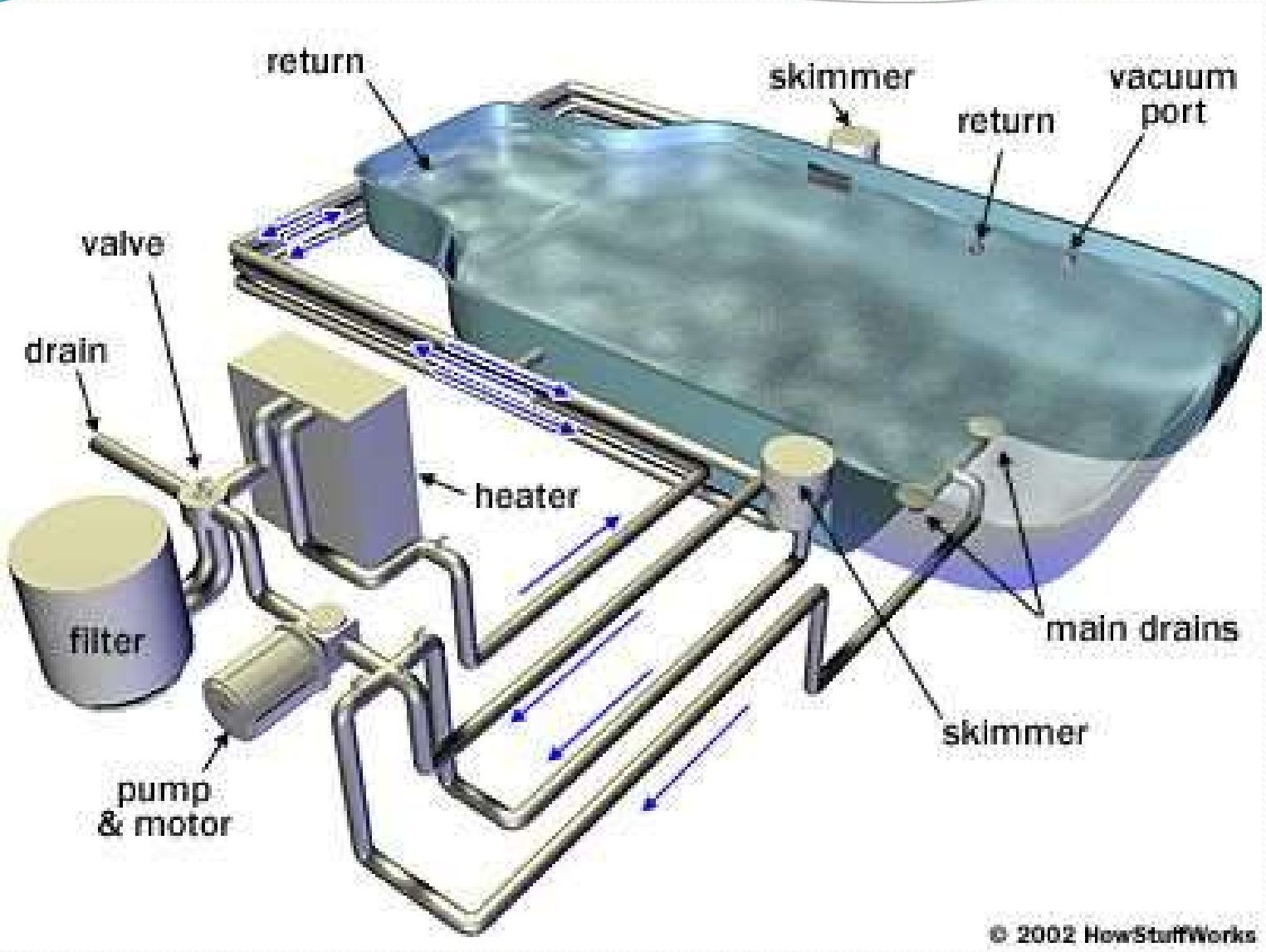
- Perimeter overflow system piping (after 5/1/2010) shall be sized to handle 100 percent of the design flow rate. - .2518 (c)
- The main drain piping (after 5/1/2010) shall be sized to handle 100 percent of the design flow rate. - .2518 (c)
- Vacuum ports that are provided shall be at least 6 inches and no greater than 18 inches below the water line and shall have a self-closing cap designed to be opened with a tool. - .2518 (f)

# Important Things to Remember

- Flow-through rate for each skimmer is between 20 gpm and the maximum flow the skimmer is certified for under NSF Standard 50. - .2518(k)(3)(A)
- For stairs wider than 20 feet, additional handrails shall be provided and spaced no more that 10 feet from adjacent handrails or stair ends. - .2521 (b)(3)
- Lighting – Must meet .2524 (d or e) for new pools
- Fences – 45 inches between horizontal members and no more than 2 inches underneath. .2528

# Important Things to Remember

- Drain Safety Compliance in Rule .2539 SUCTION HAZARD REDUCTION.
- Drain Safety Data Sheet should be completed as part of plan review.  You can ask RDP to include, but it is not required.


return
skimmer
return
vacuum port
valve
drain
heater
filter
main drains
skimmer
pump & motor
© 2002 HowStuffWorks

# Turnover Rate vs. Design Flow

- Turnover Rate – The minimum flow rate for the type of pool to meet the rule requirements.

- Design Flow Rate – Flow rate for the specific pump chosen. Measured at 65 TDH unless calculated by engineer.

# Turnover Rate vs. Design Flow

The design flow rate must be greater than the minimum turnover rate to assure proper filtration and disinfection.

**Design flow rate will be used for**:

- Pipe sizes (will be based on 140 gpm)
- The filter(s) (must be able to filter water at 140 gpm)
- Minimum number of inlets

# Also look at maximum pump flow

- Maximum Pump Flow is the amount of water the pump will pump at the lowest head shown on the pump curve.
  - The maximum pump flow is used for drain cover sizing only.
  - Example: If the maximum pump flow is 220 gpm – then each drain cover on a 2-drain pool shall be rated to handle a flow of at least 220 gpm or more.

Let’s look at “Fairfield Inn or pool plans scan” AND a copy of the “plan review calculations and components sheet” from the items that were shared with you prior to the class.

# Plan Review Group Exercise

1. **Pool type** and required turnover rate denominator.

__*pool use 360*__ ✓

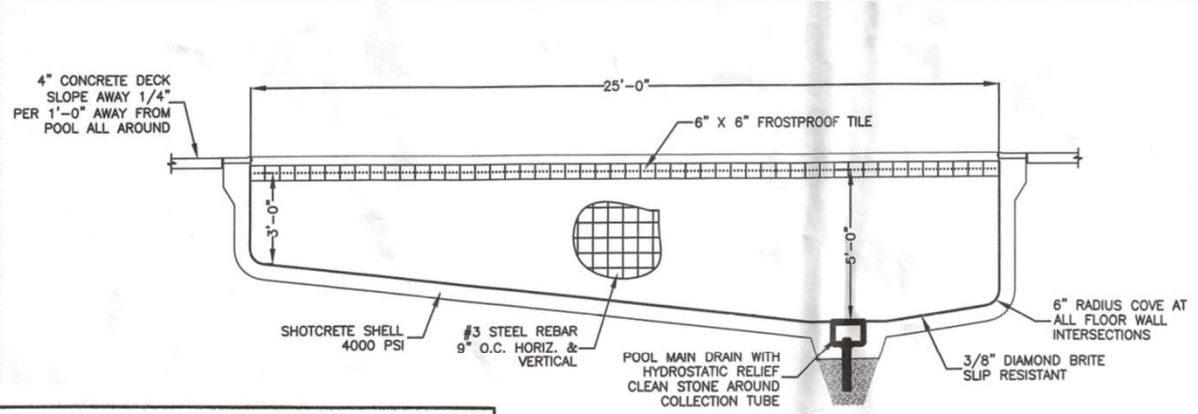
**First determine what type of public pool plans have been submitted and refer to the chart on the right to determine minimum turnover rate**

Swimming pool with a 6-hr turnover rate:

60 min/1 hr X 6 hr = 360 minutes

| Pool Type and Turnover Rates |
|---|
| **6 Hour Turnover USE (360)**<br>• Swimming pool (standing water 0+' but usually 3' min water depth) .2518(b),<br>• Water slide landing pool >60,000 gal .2543(b),<br>• Scuba pool, .2544©(2) |
| **3 Hour Turnover USE (180)**<br>• Water slide landing pool <60,000 gal with auto chemical controller .2543(b) |
| **2 Hour Turnover USE (120)**<br>• Wading pool (24" max depth separate from larger pool).2531(a)(3),<br>• Water slide pools <60,000 gal without auto chemical controller .2543(b),<br>• Training pools (24-36" depth) .2543©(1),<br>• Exercise therapy spa >1000 gal .2544(d)(2) |
| **1 Hour Turnover USE (60)**<br>• Stand- alone children's activity pool(CAP) .2531(b)(2) |
| **.5 Hour Turnover USE (30)**<br>• Recreational spas, all swim spas, hot tubs .2532(1),<br>• Interactive Play Attractions (IAPA), Spray grounds .2543(d)(5),<br>• Exercise therapy spa <1000 gal .2544(d)(2)<br>• Float Tank .2544(b)(4) 2X every hr. not in use and 2X between @ user |

# Page SP-1 show a 3’ to 5’ deep pool

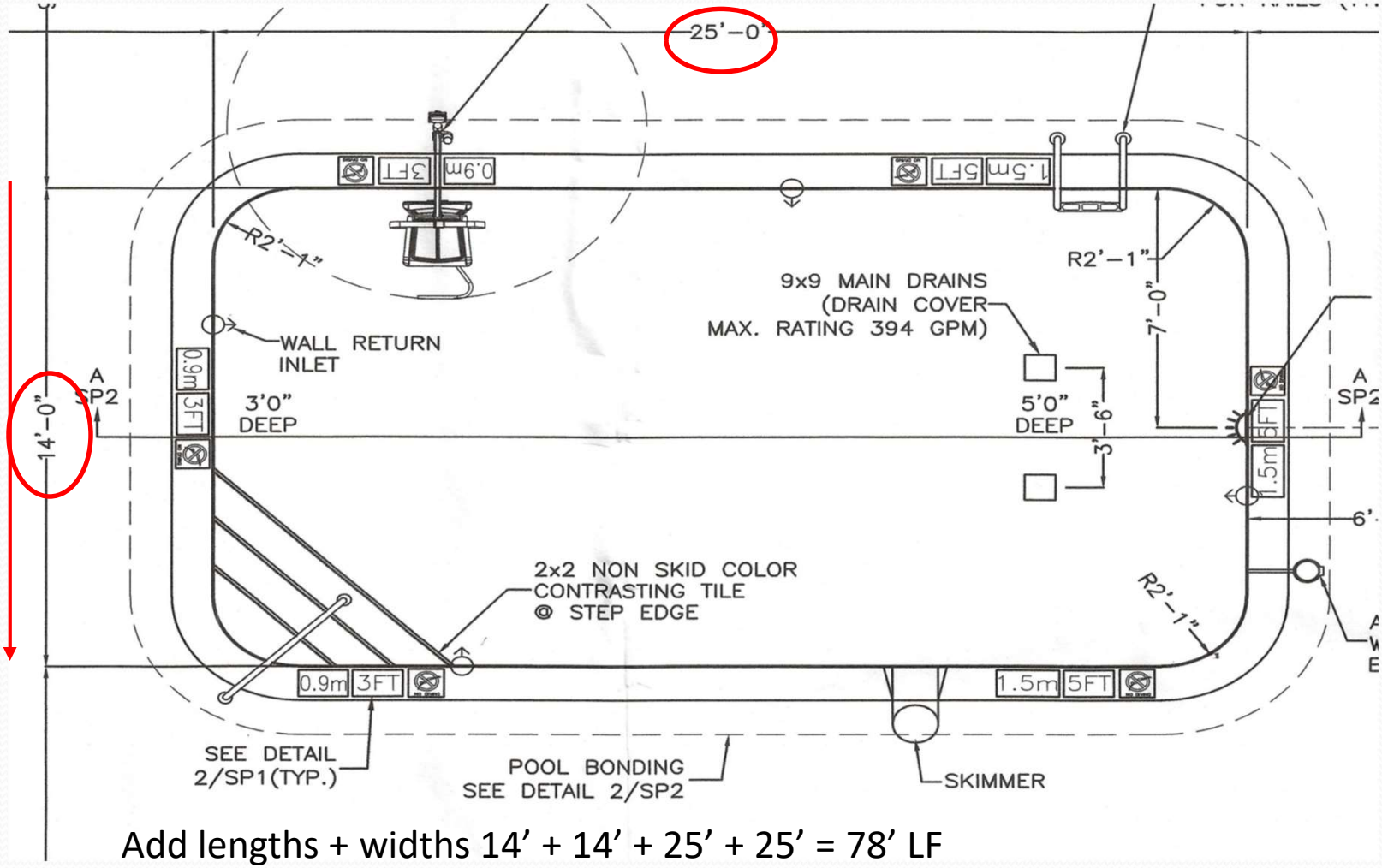



OOL SECTION
ALE: 1/4" = 1'-0"

## POOL SPECIFICATIONS

- –WATER SURFACE AREA IS 346 SQ. FT.
- –WATER DEPTH IS 3’–0” TO 5’–0”
- –NET CAPACITY IS 10,366 GALLONS WITH A FILTRATION CYCLE OF 5 HOURS AND 24 MIN AT A FLOW OF 32 GPM. (BASED ON A DYNAMIC HEAD OF 65 FEET)
- –POOL PERIMETER = 74.5 LN. FT
- –ALL PIPE WORK SHALL BE SCHEDULE 40 PVC, PRESSURE TESTED BEFORE PLACING CONCRETE
- –BATHER LOAD IS 23 PERSONS AS PER GS 15A:18A SECTION 2529
- –DECK AREA = 1,787 SQ. FT. BY OTHER THAN SPC

# 2. Pool Perimeter (lengths + widths)




Add lengths + widths 14’ + 14’ + 25’ + 25’ = 78’ LF

2. **Pool perimeter** (lengths + widths)
   (circle perimeter = $\pi d$)

Pool Specifications on plans show 74.5 LF.
Use this number since it was calculated by a CAD program and accounts for curved corners.

# POOL SPECIFICATIONS

- WATER SURFACE AREA IS 346 SQ. FT.
- WATER DEPTH IS 3'-0" TO 5'-0"
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- DECK AREA = 1,787 SQ. FT. BY OTHER THAN SPC

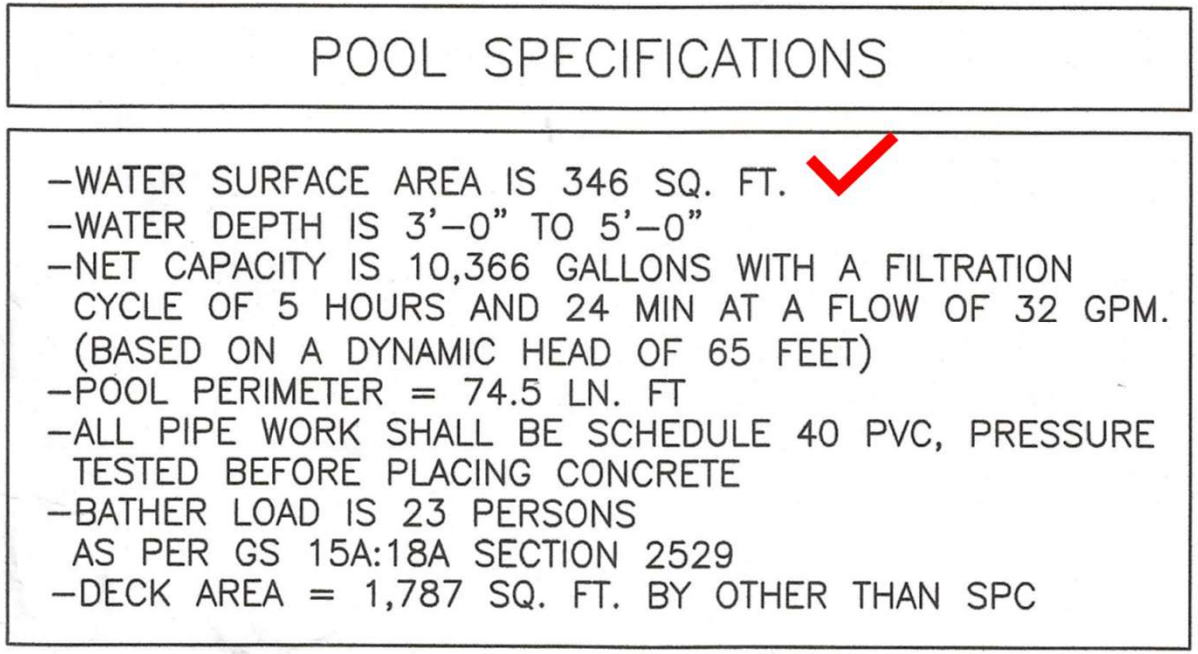
**Found on page SP1**

3. **Pool surface area** (length X width)

Multiply length X the width

14’ X 25’ = 350 SQ. FT.

Pool Specifications on page SP-1 show **346 SQ. FT**.



POOL SPECIFICATIONS

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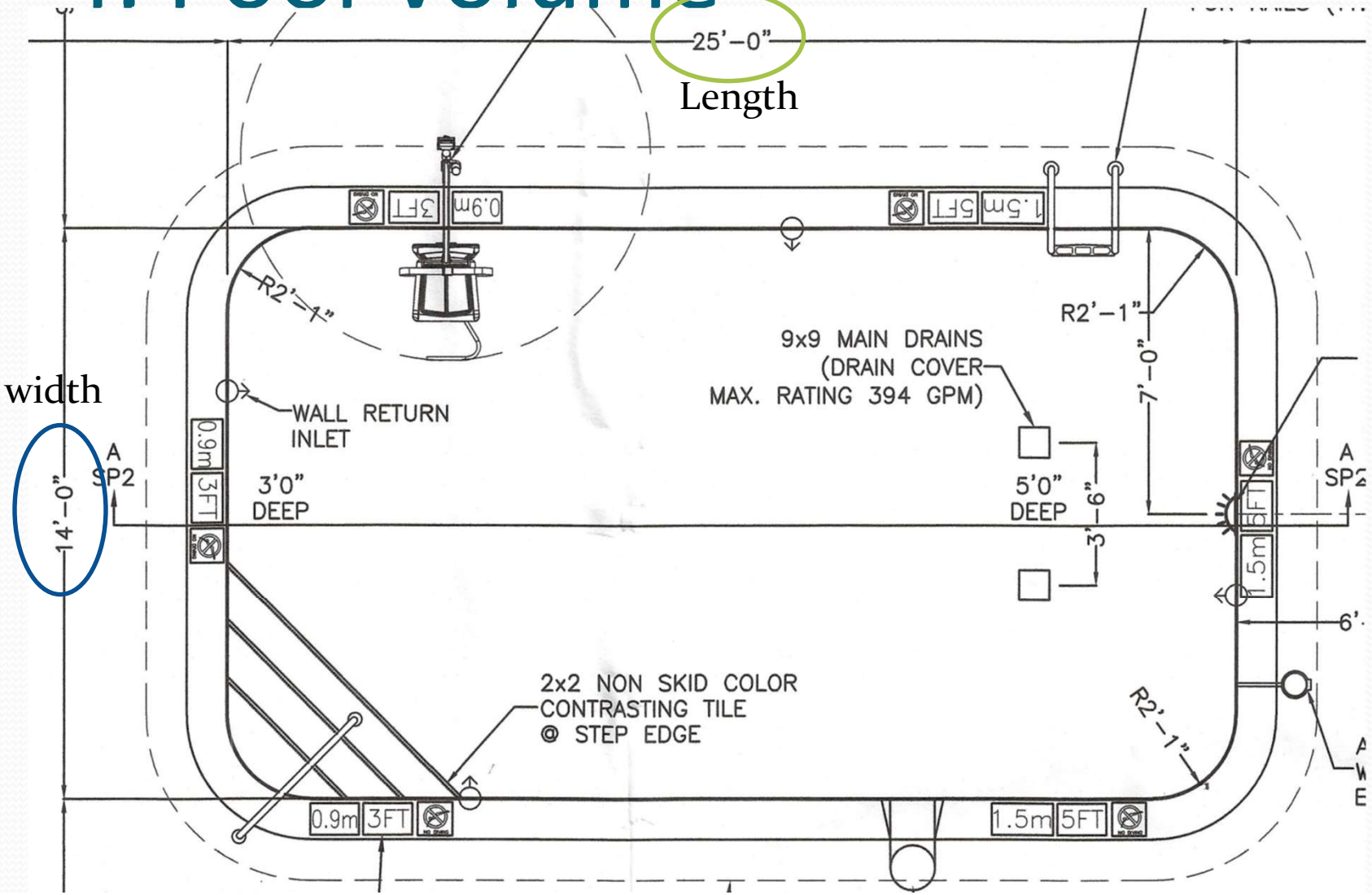
# 4. Pool Volume



4. **Pool volume** = length X width X avg. depth X 7.48, (There are 7.48 gallons per cubic foot of water.)

(circular is πr^2 X avg depth X 7.48 is used for round pools.)

Length = **25'** Width = **14'** Average depth (3'+ 5') = 8'/2 = **4'**

**25' x 14' x 4' x 7.48 = 10,472 gal**

**Pool Specifications on plans show 10,366 gal**

# POOL SPECIFICATIONS

- WATER SURFACE AREA IS 346 SQ. FT.
- WATER DEPTH IS 3'-0" TO 5'-0"
- NET CAPACITY IS 10,366 GALLONS WITH A FILTRATION CYCLE OF 5 HOURS AND 24 MIN AT A FLOW OF 32 GPM. (BASED ON A DYNAMIC HEAD OF 65 FEET)
- POOL PERIMETER = 74.5 LN. FT
- ALL PIPE WORK SHALL BE SCHEDULE 40 PVC, PRESSURE TESTED BEFORE PLACING CONCRETE
- BATHER LOAD IS 23 PERSONS AS PER GS 15A:18A SECTION 2529
- DECK AREA = 1,787 SQ. FT. BY OTHER THAN SPC

**Found on page SP1**

5. **Minimum turnover flow rate** for a pool required by the rules: pool volume (Ref #4) ÷ assigned denominator in chart (Ref #1),

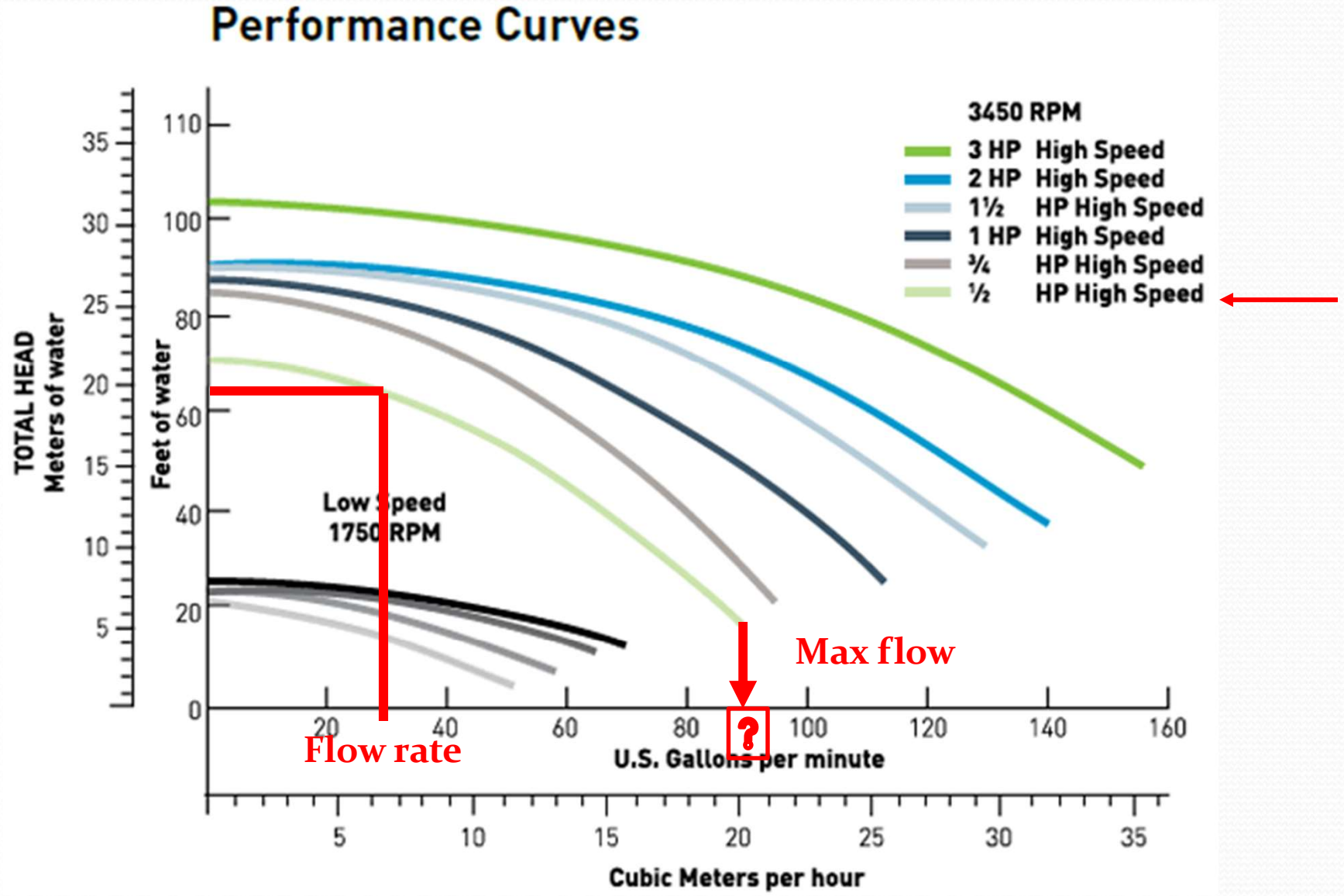
10,366 gallons ÷ 360 minutes = 28.8 GPM

6. **Design flow rate** of circulation must be > than minimum turnover flow rate: Ref #6 > Ref #5

Pump Mfg; Pentair_____
Model #: WFE-2_____ HP____1/2_____
____30 - 32__GPM at ____65_____TDH

Pool Specifications on page SP-1 shows
32 GPM @ 5hrs 24min

32 GPM exceeds the minimum turnover of 28 GPM


Performance Curves
TOTAL HEAD
Meters of water
Feet of water
3450 RPM
3 HP High Speed
2 HP High Speed
1½ HP High Speed
1 HP High Speed
¾ HP High Speed
½ HP High Speed
Low Speed
1750 RPM
Max flow
Flow rate
?
U.S. Gallons per minute
Cubic Meters per hour

# POOL SPECIFICATIONS

- WATER SURFACE AREA IS 346 SQ. FT.
- WATER DEPTH IS 3'-0" TO 5'-0"
- NET CAPACITY IS 10,366 GALLONS WITH A FILTRATION CYCLE OF 5 HOURS AND 24 MIN AT A FLOW OF 32 GPM. (BASED ON A DYNAMIC HEAD OF 65 FEET)
- POOL PERIMETER = 74.5 LN. FT
- ALL PIPE WORK SHALL BE SCHEDULE 40 PVC, PRESSURE TESTED BEFORE PLACING CONCRETE
- BATHER LOAD IS 23 PERSONS AS PER GS 15A:18A SECTION 2529
- DECK AREA = 1,787 SQ. FT. BY OTHER THAN SPC

**Design flow rate (32 gpm) will be used for:**

- **Checking pipe sizes**
- **Checking filter(s) capable of handling 32 gpm**
- **Required number of inlets**

**Max Flow of Circulation Pump is** used for approving the drain cover

Max Flow ___90_____ GPM

- Note: Use least resistance: lowest Total Dynamic Head. If a multi-speed or variable speed pump is provided, you must use Max flow of the highest speed for drain cover comparison and approval.

7. **Number of inlets required** _____, Plan shows _____
(Design flow in Ref #6 ÷ 20 GPM),

Inlet Notes:

- Must have a minimum of 4 inlets for pools and uniform circulation/ no part of pool more than 25 feet from any inlet
- Must be adjustable

Inlet Mfg. & Model #: _____Hayward SP-1419C_____

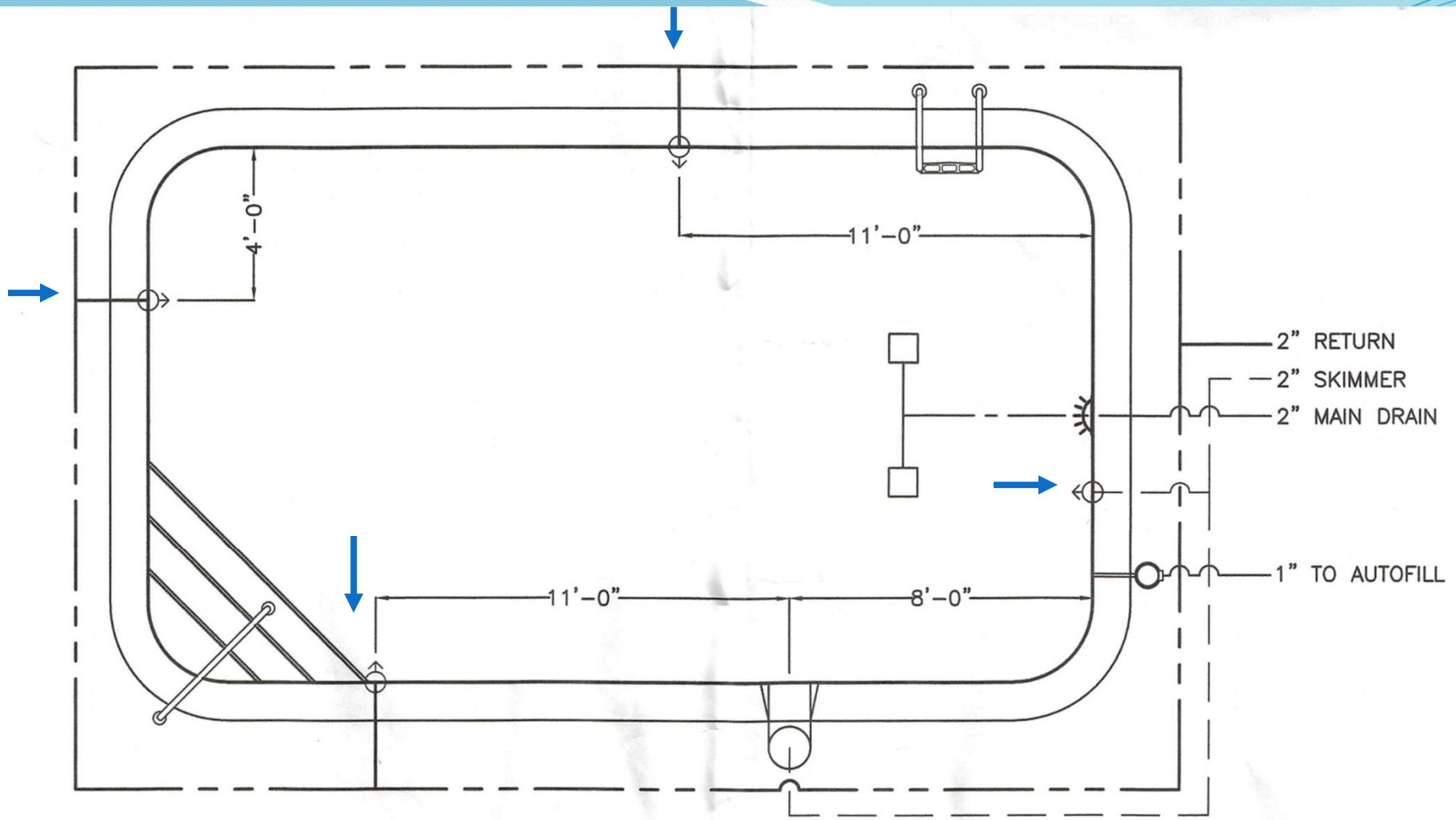
**32gpm/20 = 1.6 inlets; however, are there 4 inlets to meet minimum required by the rules?**

**The Pool Equipment List and SP1 show 4 inlets**

# Inlets listed on page SP2 under equipment list

| POOL EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
| 1 | PUMP | PENTAIR | WFE–2 | 1/2 HP WHISPER FLO COMMERCIAL PUMP (1 PHASE PUMP) |
| 1 | BASKET | PENTAIR | 070387 | EXTRA STAINER BASKET |
| 1 | FILTER | PENTAIR | TR50 | NSF APPROVED WITH AIR RELIEF PRESSURE GAUGE |
| 1 | VALVE | PENTAIR | 261055 | MULTIPORT VALVE |
| 1 | FLOWMETER | FLOW VIS | FV–C | 2" PVC MOUNT (BACKWASH NOT TO EXCEED 50 GPM) |
| 1 | CHLORINATOR | PENTAIR | 320 | AUTOMATIC EROSION TYPE (PENTAIR #171096) |
| | | | | |
| 1 | SKIMMER | AQUASTAR | SKR101 | INCLUDES BASKET |
| 4 | RETURN INLETS | HAYWARD | SP–1419C | ADJUSTABLE EYEBALLS |
| 2 | SUCTION OUTLET | ASA | FPK–50–809 | 9x9 SUCTION OUTLET WITH 3" PORT |
| 2 | *MAIN DRAIN COVERS | *AQUASTAR | 914101 | 9x9 ANTI–ENTRAPMENT FRAME & GRATE COVER (394 GPM MAX. RATING) |
| 1 | RELIEF VALVE | HAYWARD | SP–1056 | 1 1/2" HYDROSTATIC RELIEF VALVE |
| 1 | COLLECTOR TUBE | HAYWARD | SP–1055 | 1–1/2" x 12" COLLECTOR TUBE |
| 1 | AUTO FILL | PENTAIR | T40FW | AUTOFILL W/ BRASS FLOAT VALVE |
| 1 | HANDRAIL | S.R. SMITH | 3HR–4–065 | 4'–0" STAINLESS STEEL HANDRAIL |
| 1 | LADDER | S.R. SMITH | VLLS–103S–MG | 3–STEP LADDER |
| 1 | LIGHT | PENTAIR | 78458100 | 500W INCANDESCENT UNDERWATER LIGHT (50 FT CORD) |
| 1 | NICHE | PENTAIR | 78210600 | STAINLESS STEEL W/ 1" HUB |
| 1 | LIFT | AQUA CREEK | RANGER | ADA COMPLIANT HANDICAP SWIM LIFT<br>BATTERY POWERED<br>350 LB. OPERATING LOAD CAPACITY |

*MAIN DRAINS MUST CONFORM TO ANSI/ASME A112.19.8–2007




| LEGEND |
| --- |
| RETURN |
| SKIMMER |
| MAIN DRAIN |

4 / SP1 POOL PLUMBING PLAN

SCALE: 1/4" = 1'-0"

**4 return inlets shown on SP1**

# 8. What filter is shown on equipment list?

| POOL EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
| 1 | PUMP | PENTAIR | WFE–2 | 1/2 HP WHISPER FLO COMMERCIAL PUMP (1 PHASE PUMP) |
| 1 | BASKET | PENTAIR | 070387 | EXTRA STAINER BASKET |
| 1 | FILTER | PENTAIR | TR50 | NSF APPROVED WITH AIR RELIEF PRESSURE GAUGE |
| 1 | VALVE | PENTAIR | 261055 | MULTIPORT VALVE |
| 1 | FLOWMETER | FLOW VIS | FV–C | 2" PVC MOUNT (BACKWASH NOT TO EXCEED 50 GPM) |
| 1 | CHLORINATOR | PENTAIR | 320 | AUTOMATIC EROSION TYPE (PENTAIR #171096) |
| | | | | |
| 1 | SKIMMER | AQUASTAR | SKR101 | INCLUDES BASKET |
| 4 | RETURN INLETS | HAYWARD | SP–1419C | ADJUSTABLE EYEBALLS |
| 2 | SUCTION OUTLET | ASA | FPK–50–809 | 9x9 SUCTION OUTLET WITH 3" PORT |
| 2 | *MAIN DRAIN COVERS | *AQUASTAR | 914101 | 9x9 ANTI–ENTRAPMENT FRAME & GRATE COVER (394 GPM MAX. RATING) |
| 1 | RELIEF VALVE | HAYWARD | SP–1056 | 1 1/2" HYDROSTATIC RELIEF VALVE |
| 1 | COLLECTOR TUBE | HAYWARD | SP–1055 | 1–1/2" x 12" COLLECTOR TUBE |
| 1 | AUTO FILL | PENTAIR | T40FW | AUTOFILL W/ BRASS FLOAT VALVE |
| 1 | HANDRAIL | S.R. SMITH | 3HR–4–065 | 4'–0" STAINLESS STEEL HANDRAIL |
| 1 | LADDER | S.R. SMITH | VLLS–103S–MG | 3–STEP LADDER |
| 1 | LIGHT | PENTAIR | 78458100 | 500W INCANDESCENT UNDERWATER LIGHT (50 FT CORD) |
| 1 | NICHE | PENTAIR | 78210600 | STAINLESS STEEL W/ 1" HUB |
| 1 | LIFT | AQUA CREEK | RANGER | ADA COMPLIANT HANDICAP SWIM LIFT<br>BATTERY POWERED<br>350 LB. OPERATING LOAD CAPACITY |

*MAIN DRAINS MUST CONFORM TO ANSI/ASME A112.19.8–2007

# FILTER

**Filter** (sand, DE, cartridge) sized properly per .2519 **Ref NSF.org**

| | |
|---|---|
| High Rate Sand | 15 – 20 gpm per sf of filter surface area |
| Rapid Rate Sand | 3 gpm per sf of filter surface area |
| Vacuum Sand | 15 gpm per sf of filter surface area |
| DE with slurry | 2.5 gpm per sf of filter surface area |
| DE without slurry | 2 gpm per sf of filter surface area |
| Cartridge | .375 gpm per sf of filter surface area |

Filter Mfg. & Model#_____

Number of Filters: _____

Design Flow Rate Ref # 6 ÷ FMR listed in chart = size filter surface area required. Compare to the filter specification sheet for verification that filter surface area is adequate. Filter must handle more than the design flow rate or more filters will be needed.

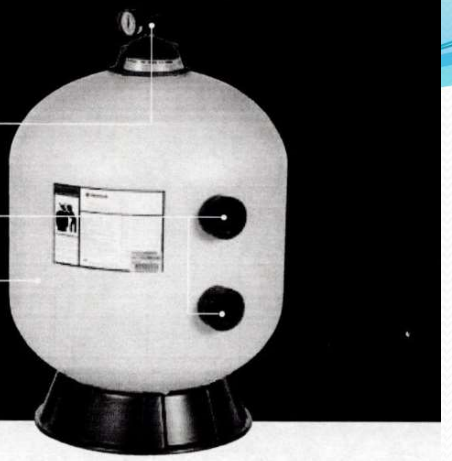
MFG. & Model # Pentair TR50 Number of Filters 1

32/20=1.85 Filter Surface Area on Spec Sheet 2.46

Filter media rates are found in rule .2519. High-rate sand filters are sized at 15 – 20 gpm flow (per mfg) to determine how much square footage of filter surface is required.

# Filter Spec Sheet

# TRITON® II
## FIBERGLASS SAND FILTER



Easy access, heavy-duty closure with built-in pressure relief valve makes inspection and maintenance fast, safer and easy

Threaded bulkhead connectors for easy installation and service

Glaslok™ process creates a one-piece, fiberglass-reinforced tank with UV-resistant surface finish for years of unequaled strength and durability

| Model Number | Filter Area Sq. Ft | Vertical* Clearance | Filter Diameter | Required Sand† (lbs) | Flow Rate GPM | | Turnover Capacity-Res. (Gallons) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Res.** | Com. | 8 hrs. | 10 hrs. | 12 hrs. |
| TR 40 | 1.92 | 32.5" | 19" | 175 | 38 | 38 | 18,240 | 22,800 | 27,360 |
| TR 50 | 2.46 | 36.75" | 21" | 225 | 49 | 49 | 23,520 | 29,400 | 35,280 |
| TR 60 | 3.14 | 37.5" | 24" | 325 | 63 | 63 | 30,240 | 37,800 | 45,360 |
| TR 100 | 4.91 | 41.75" | 30" | 600 | 98 | 74 | 47,040 | 58,800 | 70,560 |
| TR 140 | 7.06 | 47.25" | 36" | 925 | 141 | 106 | 67,680 | 84,600 | 101,520 |

†Use standard #20 silica sand.

*Required clearance to remove the closure.

**Maximum flow rate. Flow rate is based on 20 GPM per sq. ft. of filter area. Actual system flow will depend on plumbing size and other system components.

**AVAILABLE FROM:**

PENTAIR

WATER SOLUTIONS, 1620 HAWKINS AVE, SANFORD, NC 27330 800.831.7133 WWW.PENTAIRPOOL.COM



pumps / filters / heaters / heat pumps / automation / lighting / cleaners / sanitizers / water features / maintenance products

9. **Surface Overflow systems:**
Number of NSF skimmers required: _____, Plan shows _____

Skimmer Notes:

- Pool surface area (Ref #3) ÷ 400sf or fraction thereof for swimming pools,
- Where flooded suction on the pump is not possible to prevent cavitation or loss of prime, skimmers shall be protected from air entrapment by auto-fill, fill spout/ hose. Equalizer lines are now prohibited in public pools.

Skimmer Mfg. Aquastar & Model # SKR101
Max flow for Skimmer provided per NSF Listing. 55 GPM;
may require additional skimmers if inadequate.

**346 SF ÷ 400 SF = 0.87, round up to 1 Skimmer**

**The Pool Equipment List SP-2 and SP1 show 1 Skimmer**

# Skimmer listed on equipment list on SP2

| POOL EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
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| 1 | BASKET | PENTAIR | 070387 | EXTRA STAINER BASKET |
| 1 | FILTER | PENTAIR | TR50 | NSF APPROVED WITH AIR RELIEF PRESSURE GAUGE |
| 1 | VALVE | PENTAIR | 261055 | MULTIPORT VALVE |
| 1 | FLOWMETER | FLOW VIS | FV–C | 2" PVC MOUNT (BACKWASH NOT TO EXCEED 50 GPM) |
| 1 | CHLORINATOR | PENTAIR | 320 | AUTOMATIC EROSION TYPE (PENTAIR #171096) |
| | | | | |
| 1 | SKIMMER | AQUASTAR | SKR101 | INCLUDES BASKET |
| 4 | RETURN INLETS | HAYWARD | SP–1419C | ADJUSTABLE EYEBALLS |
| 2 | SUCTION OUTLET | ASA | FPK–50–809 | 9x9 SUCTION OUTLET WITH 3" PORT |
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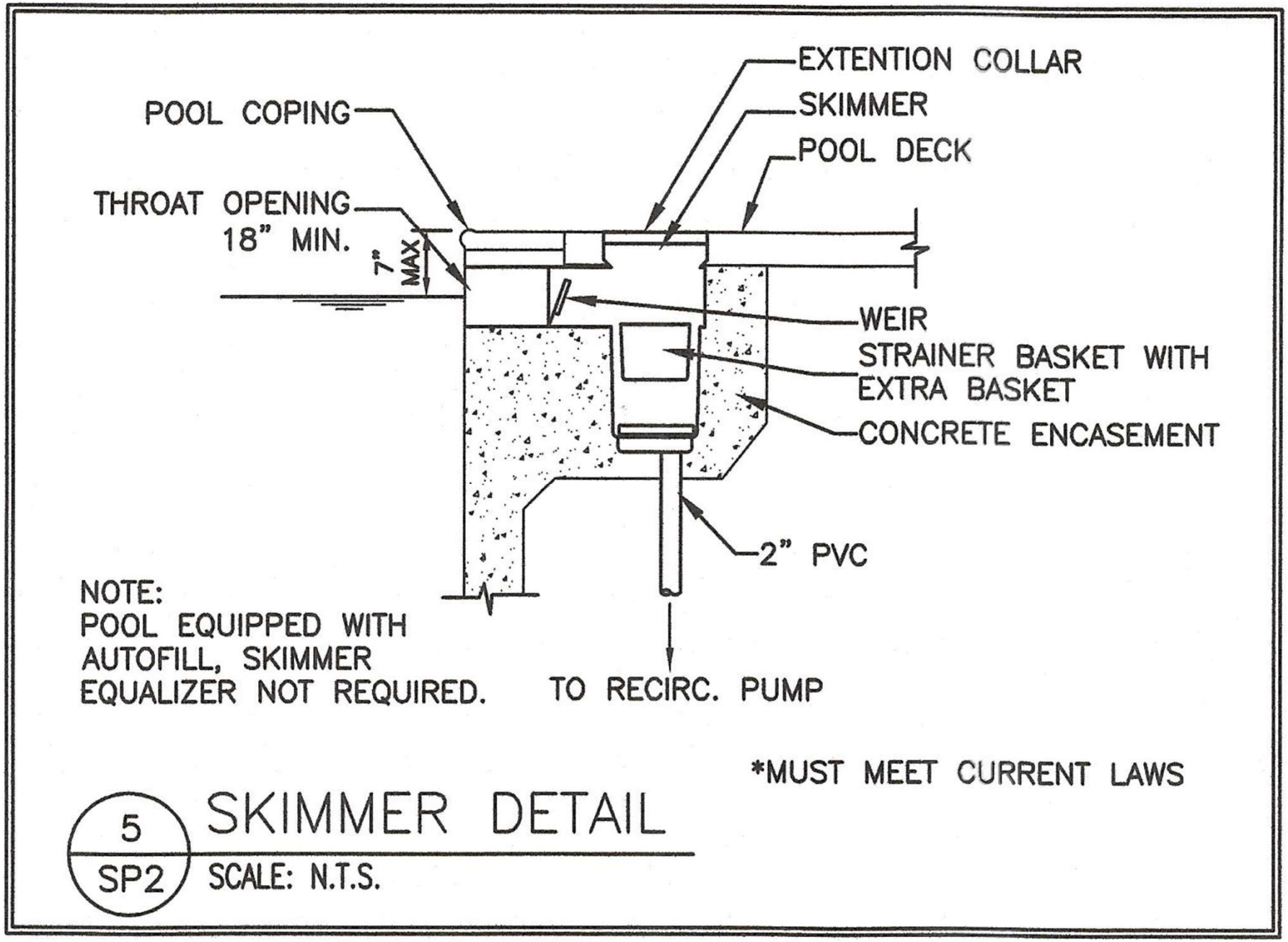
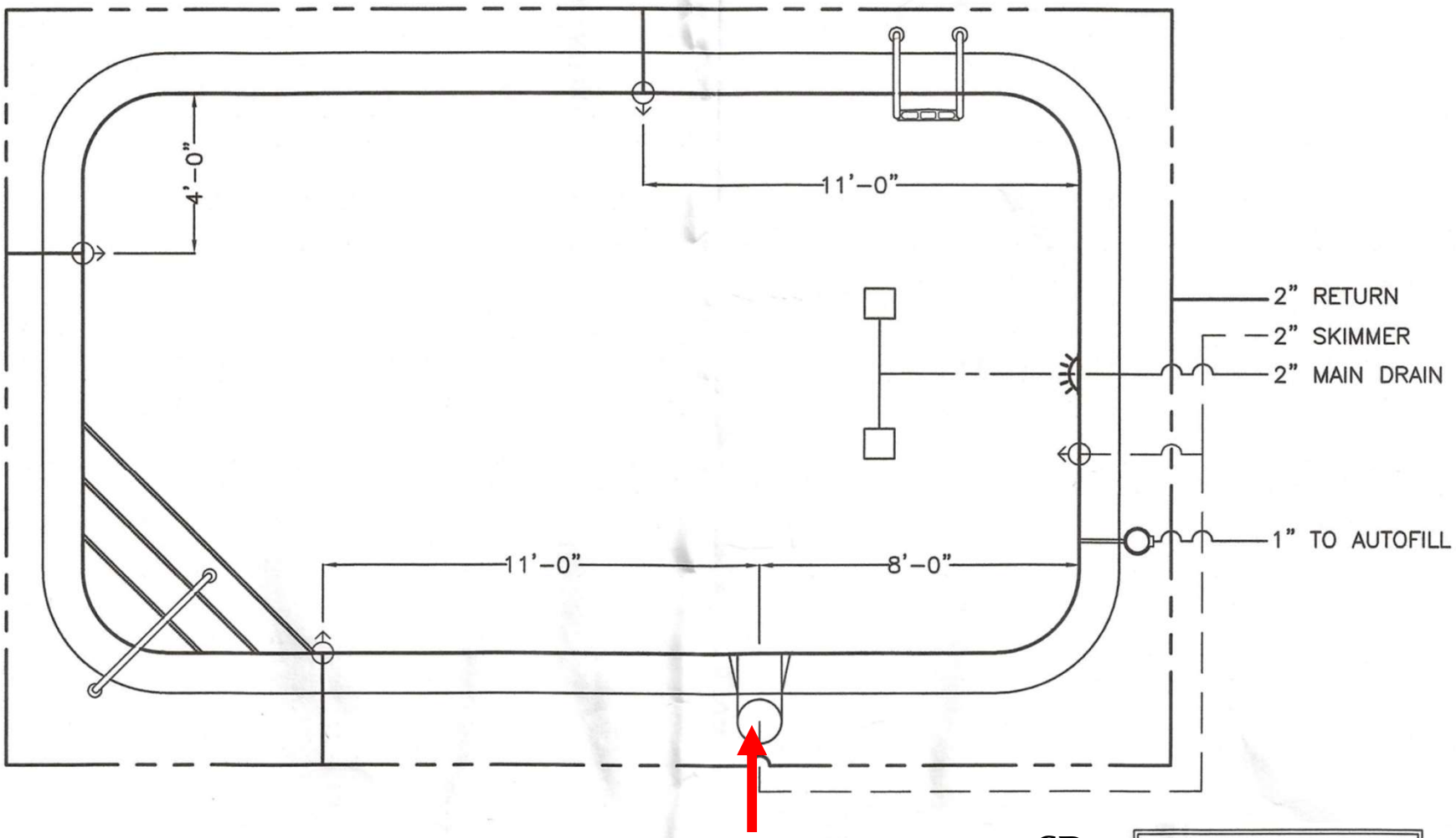
| 1 | LIFT | AQUA CREEK | RANGER | ADA COMPLIANT HANDICAP SWIM LIFT<br>BATTERY POWERED<br>350 LB. OPERATING LOAD CAPACITY |

*MAIN DRAINS MUST CONFORM TO ANSI/ASME A112.19.8–2007


EXTENTION COLLAR
SKIMMER
POOL DECK
POOL COPING
THROAT OPENING
18" MIN.
7" MAX.
WEIR
STRAINER BASKET WITH
EXTRA BASKET
CONCRETE ENCASEMENT
2" PVC
NOTE:
POOL EQUIPPED WITH
AUTOFILL, SKIMMER
EQUALIZER NOT REQUIRED.
TO RECIRC. PUMP
*MUST MEET CURRENT LAWS
5
SP2
SKIMMER DETAIL
SCALE: N.T.S.

# Only 1 Skimmer is required per 400 SF surface area




SP1

| LEGEND |
| --- |
| RETURN |
| SKIMMER |
| MAIN DRAIN |

4 / SP1 POOL PLUMBING PLAN
SCALE: 1/4" = 1'-0"

# Also under 9, gutter system and or Balance Tank.

Doesn't apply to the plan, because this pool is using a skimmer rather than gutter system and there is no balance surge tank.

## 10. Circulation Main Drains and pipe size:

| PVC Sch. 40 Pipe Sizing Chart per .2518© | | | | | | | |
|---|---|---|---|---|---|---|---|
| pipe size | 1" | 1.5" | 2" | 2.5" | 3" | 4" | 6" |
| Suction PVC pipe @6ft/sec (all drains, skimmers, gutters) | 16 | 38 | 62 | 89 | 138 | 238 | 539 |
| Discharge or Returns (inlets) PVC pipe @10ft/sec | 27 | 63 | 104 | 149 | 230 | 396 | 899 |

Number of drains provided: _____

- in deepest section
- within 15 ft. from a side wall.
- connected by T pipe at least 3' apart at center or on different planes of pool
- max 30' apart
- Meets APSP-7
- If no drains provided, provisions for emptying pool completely provided per .2518(j)(1) N/A.

**Are all of these criteria met?**

**Main drain pipe size required using pipe sizing chart above: _____" , Plan shows _____ "**

**(Ref #6) , What is our design flow?**

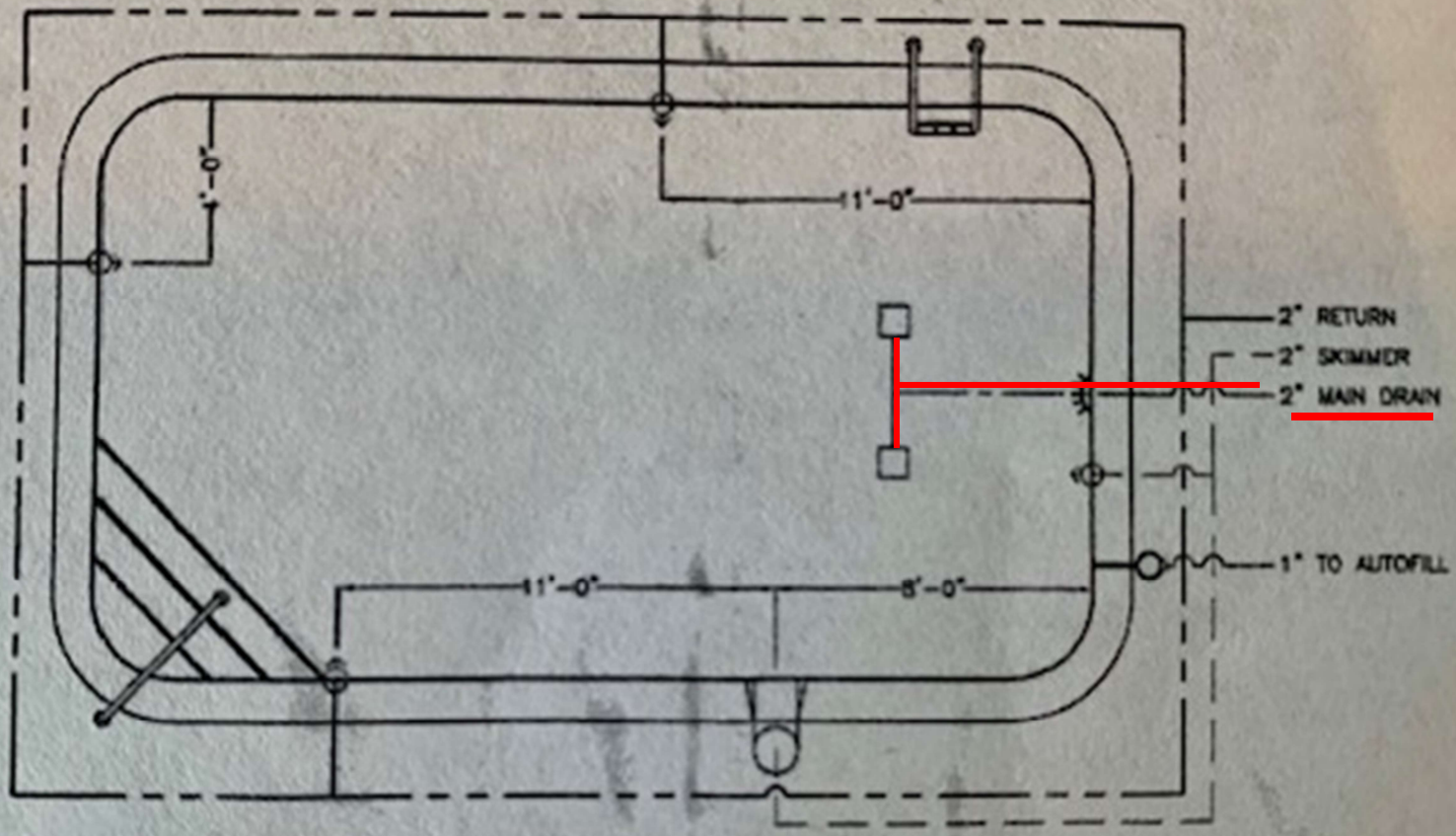
- Pipe size must be capable of carrying 100% design flow of circulation pump per .2518(d)

Number of main drains provided: 2

Main drain pipe size required using pipe sizing chart: 1.5" based on 32 GPM design flow.

Plan Shows: 2"

# POOL PLUMBING PLAN SP1 showing main drain plumbing 2" suction PVC




¼" = 1' scale

4 SP1 POOL PLUMBING PLAN
SCALE: 1/4" = 1'-0"

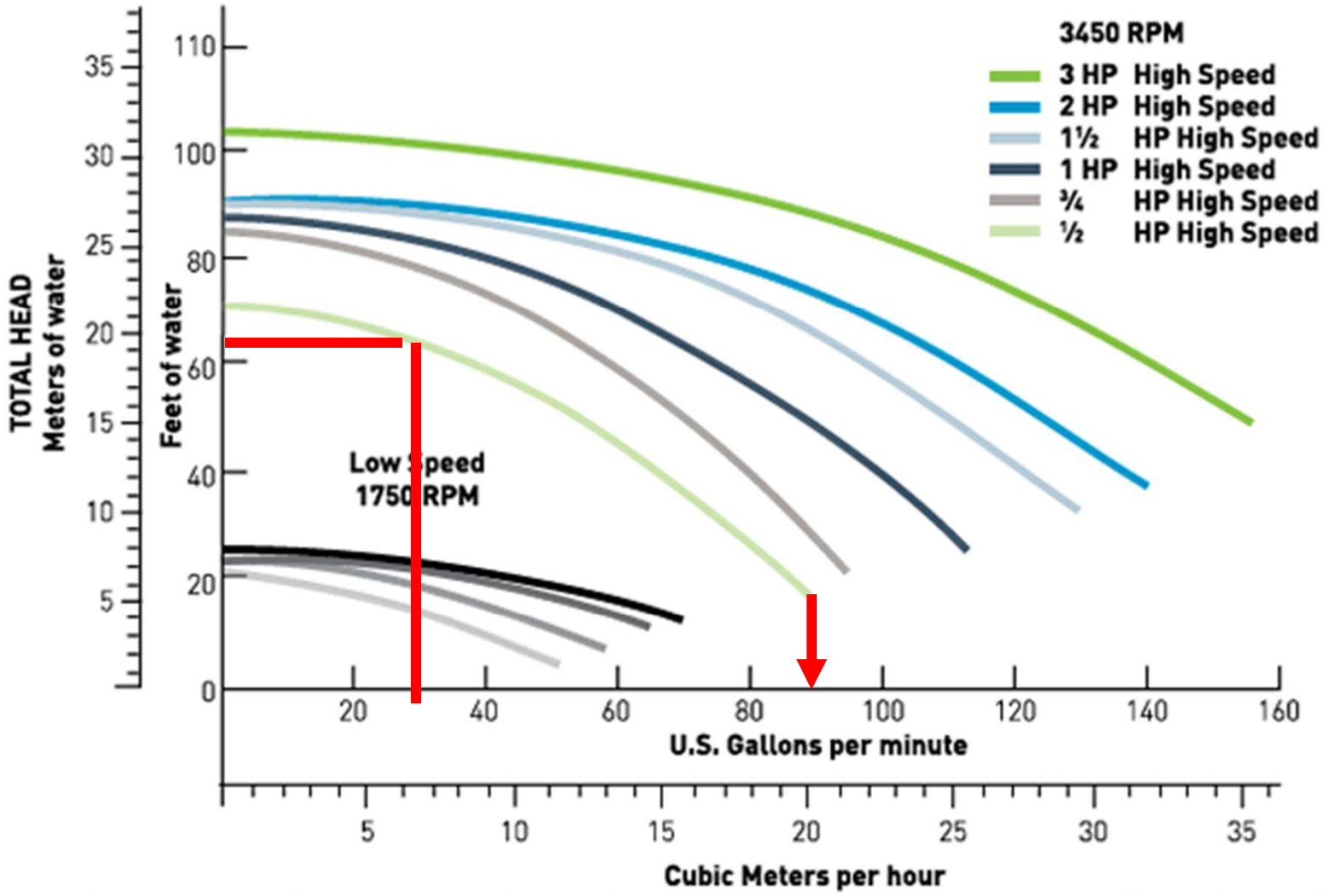
**11. Max flow of circulation pump _____ GPM**

Note:

- Use lowest TDH on circulation pump performance curve OR engineer calculated TDH.
- If multi-speed or variable speed pump is provided, use Max flow of highest speed for drain cover comparison in #18.) **REF #7**

# Max flow of circulation pump is 90 GPM

# Performance Curves



**12. Max flow rating of main drain covers _____ max GPM per floor/ wall**

- Life span of cover _____ years:
- Cover Mfg. & Model #_____
- **Cover GPM rating must be higher than max flow of pump.**

**VGB main drain covers 560/300 max GPM per floor/ wall**
Life span of cover 5 years:
Cover Mfg. & Model # Aquastar 914101

**Are covers rated higher than the max flow of the pump? YES**
**560 GPM is greater than max flow 90 GPM of circulation pump.**

IAPMO R&T
Third-Party Tested

AQUASTAR pool products

# General Certificate of Conformity (GCC)

## 14" Square Anti-Entrapment Suction Outlet Cover

Manufacturer:
AquaStar Pool Products, Inc.
2340 Palma Dr. #104
Ventura, CA 93003

**Part Number Part #: 914xxx**
**Flow Ratings: Floor - 560 GPM Wall - 300 GPM**
**Minimum Sump Depth: 3 inches**

This is to certify that this model number meets or exceeds the requirements of Section 1404 (b) of the Virginia Graeme Baker Pool & Spa Safety Act (VGB-2008), ASME/ANSI A112.19.8-2007, ANSI/APSP-16-2011 standards and safety regulation 16 CFR 1450 Virginia Graeme Baker Pool and Spa Safety Act Regulations set forth by the Consumer Product Safety Commission.

Citation: This SOFA is certified to 16 CFR 1450; Virginia Graeme Baker Pool and Spa Safety Act. This product's certification is based upon the International Association of Plumbing and Mechanical Officials test report dated May 25th, 2011 and the certification is renewed annually through continuous compliance inspections by the International Association of Plumbing and Mechanical Officials (IAPMO), 5001 East Philadelphia St Ontario, CA 91761-2816, (909) 472-4100.

The test results supporting the product certification is maintained by Steve Ohnemus 2340 Palma Dr. #104 Ventura, CA 93003, Phone: (877) 768-2717x5021, Email: SteveO@aquastarpoolproducts.com.

### Installation Record

Date of Manufacture:_____

The date of manufacture is represented by a time stamp located on the product. Do not use this date to determine the expiration date.

Description of Drain Location:_____
_____

Date Installed: _____
(With or without water in pool or spa)

Expiration Date: _____
(Five years from installation)

Installed by: _____

(877) 768-2717 - www.aquastarpoolproducts.com - info@aquastarpoolproducts.com

**13. Main drain sump requirements** (Use VGB drain cover Manufacturer Installation Instructions provided for single or double drain cover to see recommended mfg. sump(s) OR field-built requirements per .2518(j)(3) and .2539(c)(3)(Per APSP – 16, page 4)

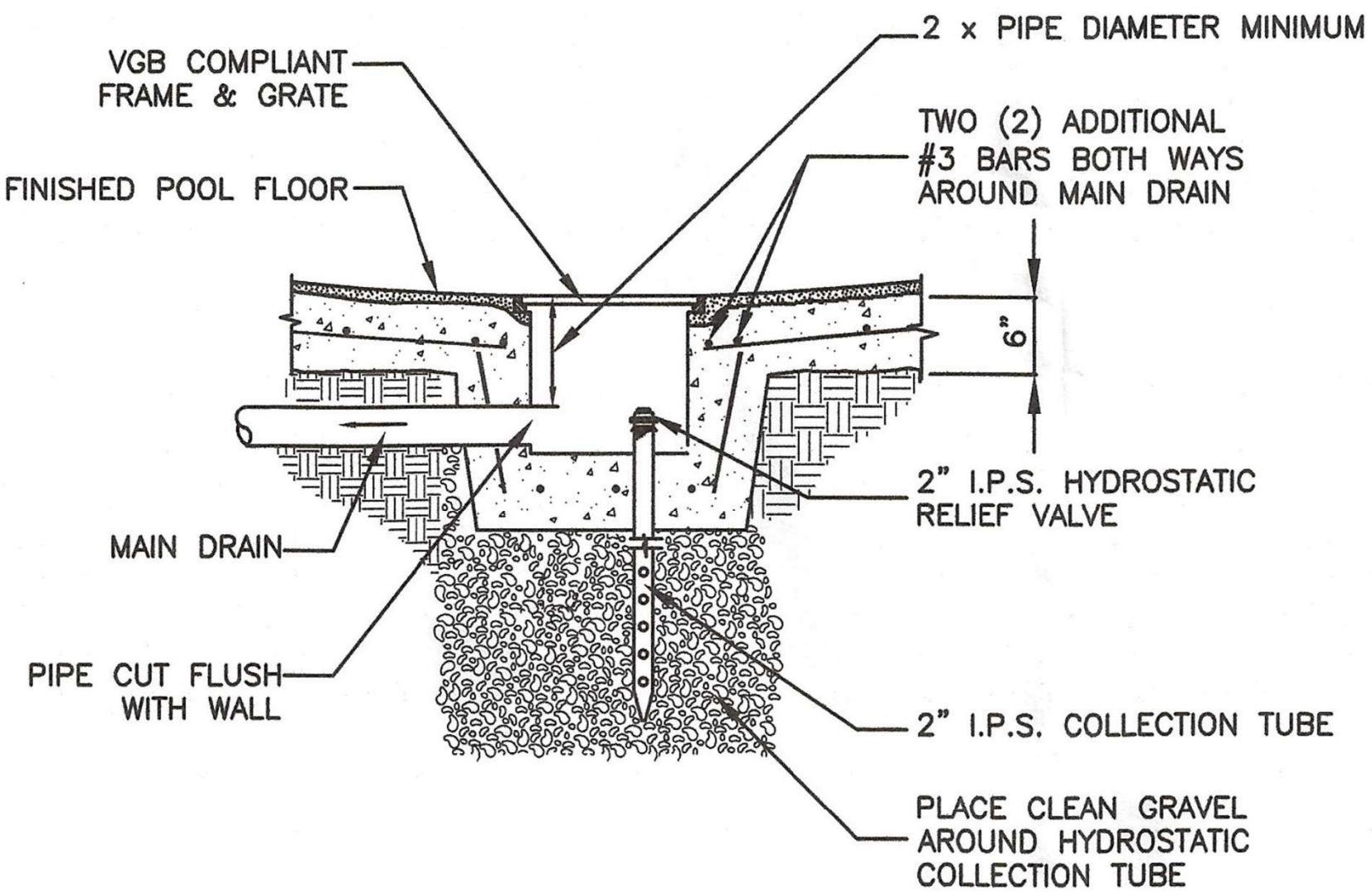
**FIELD BUILT SUMPS MUST BE CERTIFIED BY A REGISTERED DESIGN PROFESSIONAL OR ENGINEER per APSP 7, page 4**

| Manufactured Sump | OR minimum Field Built Sump Measurements |
|---|---|
| Model # | Letter from Registered Design Professional certifying sump is to be built per requirements. |

Hydrostatic Relief Valve or Drainage Provided per .2515 (b). Manufacturer and Model#_____

**Aquastar 914101 requires a minimum of 3" sump depth to pipe.**
**Does the plan show if this is met? NO, "NTS", means Not To Scale.**
**But the suction outlet specification sheet that this cover is a compatible grate.**

**Hydrostatic Relief Valve? YES, Manufacturer and Model: Hayward SP-1056**




7
SP2

# MAIN DRAIN DETAIL

SCALE: N.T.S.

amfg.com/uploads/docs/heavy_duty_fiberglass_sumps.pdf

1 / 1 | 150%

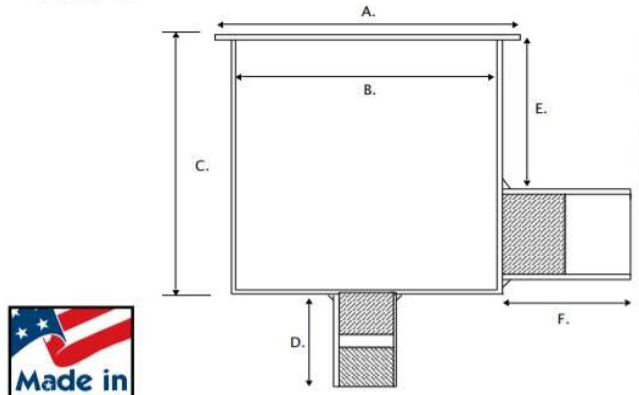
finished pool floor

1"

Height will vary based on grate manufacturer.

## Legacy Sump Flange

Frame securing clip, screw and tube of sealant are included.




The ASME A112.19.8a-2008 Standard recommends the "E" dimension to be 1.5 times the diameter of the sump's outlet from the bottom of the grate to the top of the outlet.

DUTY FIBERGLASS PRODUCTS

NSF COMPONENT

Made in the USA

VGB 2008

Frame & Grates Sold Separately

## Fiberglass LEGACY SUMP Dimensions

| Sump Sizes & Part #'s | Dimensions (in inches) * A | B | C | D | E | F | Outlet Size Compatible f.p.t. x soc | Grates ** | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| **9" x 9"** | | | | | | | | | |
| FPK-50-809 | 10.5 | 8.5 | 12 | 4.5 | 6.5 | 3 | 3" | List A | 1 |
| **12" x 12"** | | | | | | | | | |
| FPK-50-812-4 | 14 | 12.5 | 12 | 4.5 | 6.5 | 3.5 | 4" | List B | 1 |

## VGB Compatible Grates *

| Grate Sizes Part #'s | List | Open Area ( sq in.)** | Flow Rate** @1.5 ft/ sec | NOTES |
|---|---|---|---|---|
| **9" x 9"** | **A** | | | |
| CMP 25508-090 | | 38.9 | 120 gpm | |
| 640-479XV | | 39.9 | 186 gpm | |
| MLD-FGD-0909 | | 42.1 | 248 gpm | |
| 914101 | | 84 | 394 gpm | 1 |
| **12" x 12"** | **B** | | | |
| WG1032HF | | 41.07 | 232 gpm | |
| 640-4720 | | 62.4 | 292 gpm | |
| CMP 25508-120 | | 70.8 | 330 gpm | |
| MLD-FGD-1212 | | 81.3 | 340 gpm | |

2:28 PM

# Hydrostatic Relief Valve?

| POOL EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
| 1 | PUMP | PENTAIR | WFE–2 | 1/2 HP WHISPER FLO COMMERCIAL PUMP (1 PHASE PUMP) |
| 1 | BASKET | PENTAIR | 070387 | EXTRA STAINER BASKET |
| 1 | FILTER | PENTAIR | TR50 | NSF APPROVED WITH AIR RELIEF PRESSURE GAUGE |
| 1 | VALVE | PENTAIR | 261055 | MULTIPORT VALVE |
| 1 | FLOWMETER | FLOW VIS | FV–C | 2" PVC MOUNT (BACKWASH NOT TO EXCEED 50 GPM) |
| 1 | CHLORINATOR | PENTAIR | 320 | AUTOMATIC EROSION TYPE (PENTAIR #171096) |
| | | | | |
| 1 | SKIMMER | AQUASTAR | SKR101 | INCLUDES BASKET |
| 4 | RETURN INLETS | HAYWARD | SP–1419C | ADJUSTABLE EYEBALLS |
| 2 | SUCTION OUTLET | ASA | FPK–50–809 | 9x9 SUCTION OUTLET WITH 3" PORT |
| 2 | *MAIN DRAIN COVERS | *AQUASTAR | 914101 | 9x9 ANTI–ENTRAPMENT FRAME & GRATE COVER (394 GPM MAX. RATING) |
| 1 | RELIEF VALVE | HAYWARD | SP–1056 | 1 1/2" HYDROSTATIC RELIEF VALVE |
| 1 | COLLECTOR TUBE | HAYWARD | SP–1055 | 1–1/2" x 12" COLLECTOR TUBE |
| 1 | AUTO FILL | PENTAIR | T40FW | AUTOFILL W/ BRASS FLOAT VALVE |
| 1 | HANDRAIL | S.R. SMITH | 3HR–4–065 | 4'–0" STAINLESS STEEL HANDRAIL |
| 1 | LADDER | S.R. SMITH | VLLS–103S–MG | 3–STEP LADDER |
| 1 | LIGHT | PENTAIR | 78458100 | 500W INCANDESCENT UNDERWATER LIGHT (50 FT CORD) |
| 1 | NICHE | PENTAIR | 78210600 | STAINLESS STEEL W/ 1" HUB |
| 1 | LIFT | AQUA CREEK | RANGER | ADA COMPLIANT HANDICAP SWIM LIFT<br>BATTERY POWERED<br>350 LB. OPERATING LOAD CAPACITY |

*MAIN DRAINS MUST CONFORM TO ANSI/ASME A112.19.8–2007

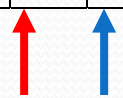
Hydrostatic Valve
SP1056

**14. Skimmers pipe size required _____" Plan shows _____"**

**Note:**

- Pipe must handle 100% of design flow rate (Ref #6), which is 37 GPM.
- Skimmer equalizer lines are prohibited in new construction.
- Is autofill/ flooded suction provided _____. Auto-fill mfg #_____

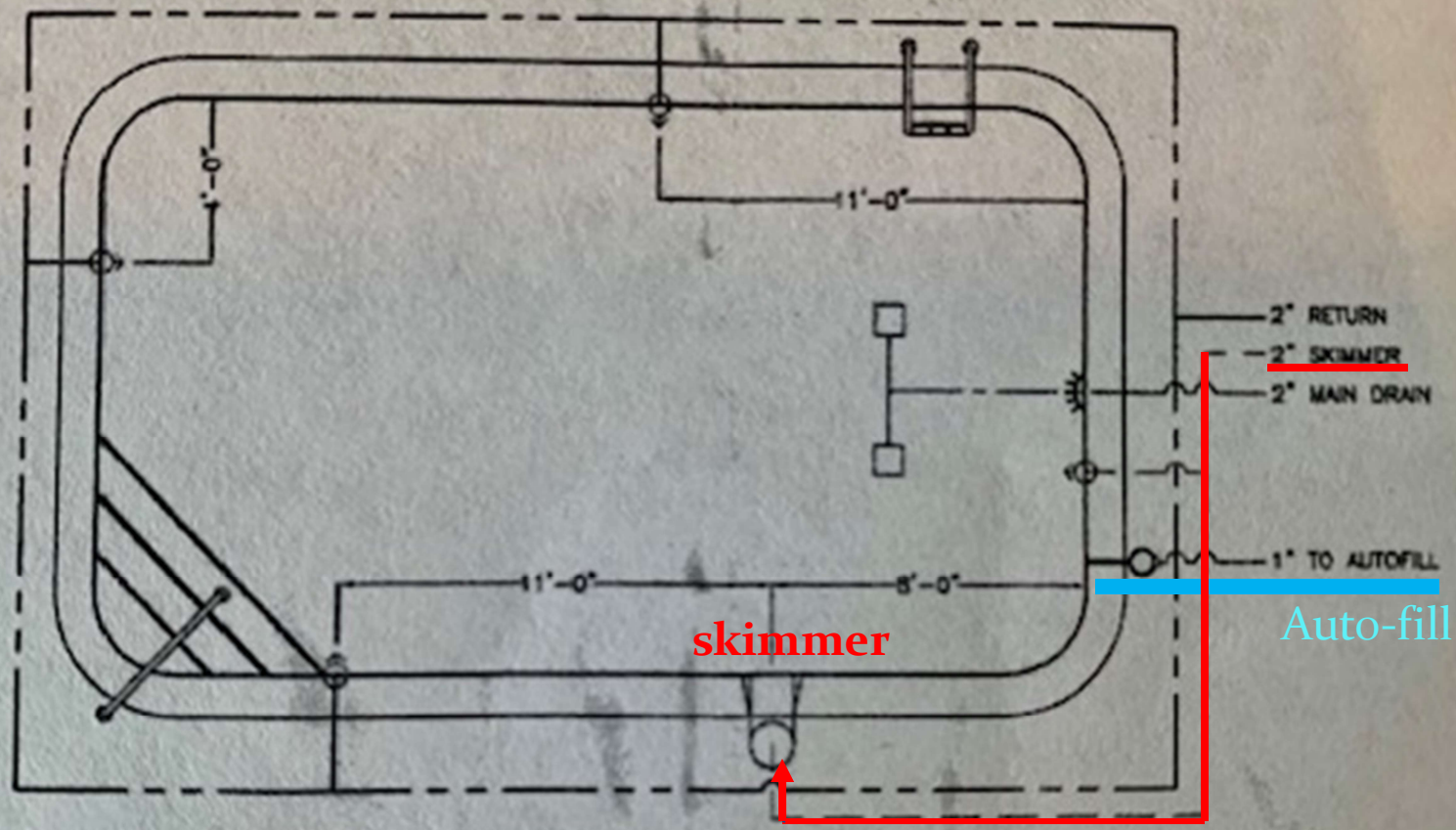
| PVC Sch. 40 Pipe Sizing Chart per .2518(c) | | | | | | | |
|---|---|---|---|---|---|---|---|
| pipe size | 1" | 1.5" | 2" | 2.5" | 3" | 4" | 6" |
| Suction PVC pipe @6ft/sec (all drains, skimmers, gutters) | 16 | 38 | 62 | 89 | 138 | 238 | 539 |
| Discharge or Returns (inlets) PVC pipe @10ft/sec | 27 | 63 | 104 | 149 | 230 | 396 | 899 |



**Pipe Size Required 1.5" Plan Shows 2" (SP1)**

Yes/ Pentair T40FW Autofill W/Brass Float Valve (Pool Equipment List)

# Pool Plumbing Plan on SP1




4 / SP1 POOL PLUMBING PLAN
SCALE: 1/4" = 1'-0"

**Or gutter system overflow** pipe size _____”Plan shows _____ “

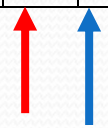
- Must handle 100% of design flow per .2518(j)(3)) (Ref #6) Use chart below.

**N/A for this pool because it is designed with recessed automatic skimming rather than gutters.**

**15. Inlet return pipe size required _____" ,** Plan shows_____"

- Use *Discharge* pipe sizing chart.
- Must handle 100% design flow of discharge (Ref #6) per .2518(d) and reduction in pipe branches must be sized to handle flow of inlets in each branch.

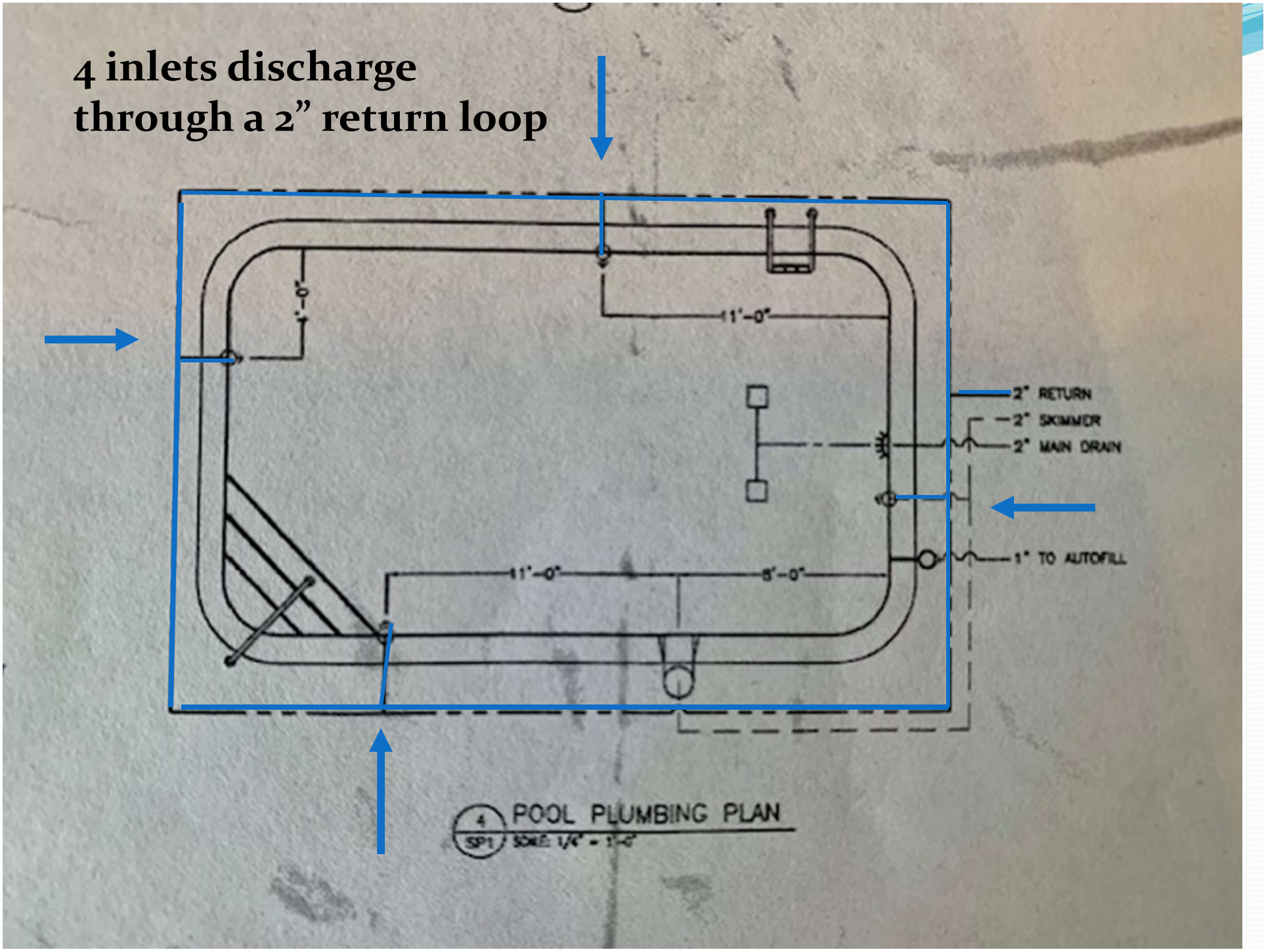
| PVC Sch. 40 Pipe Sizing Chart per .2518(c) | | | | | | | |
|---|---|---|---|---|---|---|---|
| pipe size | 1" | 1.5" | 2" | 2.5" | 3" | 4" | 6" |
| Suction PVC pipe @6ft/sec (all drains, skimmers, gutters) | 16 | 38 | 62 | 89 | 138 | 238 | 539 |
| Discharge or Returns (inlets) PVC pipe @10ft/sec | 27 | 63 | 104 | 149 | 230 | 396 | 899 |



**Based on chart, the pipe size required is at least 1.5"**

**What does the plan show? 2"**

# 4 inlets discharge through a 2” return loop



**16. Disinfectant Method:** (Erosion, salt or liquid)

Verify NSF & properly sized per volume of pool:_____
Ref. NSF.org Mfg. & Model #_____

Note:

- If erosion feeder, properly sized and additional flow meter shown if required by NSF Std. 50

- If salt system, cell capacity/ # cells: Per NSF Std. 50 annex must produce 3 lb/day/10,000 gallons. If for water conditioning only, no sizing required, but must have other approved disinfectant system

- If liquid chlorine pump, a method to prevent operation when no water circulation pump operating per .2535(6) (aka Interlock)

# PENTAIR AUTOMATIC CHLORINE/BROMINE* FEEDER MODEL #320

(* Using Bromine tablets with this device is not NSF certified)

**Features:**

- **No special venting required.**
- **Completely enclosed-no escaping gases.**
- **Positive external no-clog control valve.**
- **When used with timer, feeder is designed to automatically lower the water level so tablets are not soaking during off period of pump. This allows more efficient use of tablets.**
- **No equipment damage. Feeds sanitizer directly to pool or spa.**
- **All parts replaceable.**
- **To prevent over chlorination during use, completely completely close the control valve and the built in check valve will prevent chemical from being fed into pool or spa.**

**YOUR FEEDER IS THE MOST EFFICIENT AND TROUBLE-FREE AUTOMATIC FEEDER YOU CAN BUY, BUT IT CAN ALSO BE DANGEROUS TO YOU AND YOUR EQUIPMENT. PLEASE FOLLOW INSTRUCTIONS EXACTLY AND HEED ALL CAUTIONS. YOUR SAFETY AND THE PROTECTION OF YOUR EQUIPMENT IS OUR FIRST CONCERN.**

It is important to read all information **BEFORE** proceeding with the installation. The information will guide you in installing your feeder properly and to avoid problems due to improper installation.

**IF YOUR POOL OR SPA HAS COPPER PLUMBING . . . STOP!!**

Never install the feeder into copper plumbing as pipe damage will occur. (See Equipment Safety CAUTION sheet enclosed). **NOTE:** If heaters are used, a Fireman's Switch or equivalent must be installed to prevent possible damage and improper operation of Check Valve and other equipment subject to heat damage.

**INSTALLATION INSTRUCTIONS MODEL #320**

Note: Make sure all pumps and timer switches are in the OFF position.

**WHERE TO INSTALL YOUR FEEDER**

The #320 feeder is designed for permanent installation in the return line of your new pool or spa and must always be installed after the heater, pool cleaner, valves, etc. If your pool does not have a heater, then it must be installed after the filter or any other piece of equipment.

**DAMAGE TO THE HEATER AND OTHER EQUIPMENT COULD RESULT IF HIGHLY CHLORINATED WATER FLOWS THROUGH IT.**

If your pool is equipped with a solar system it may be necessary to install a **HI FLOW KIT.** This kit can be installed if your feeder is not getting adequate flow and/or pressure through the system. Refer to information on sheet enclosed. Your feeder may be installed in existing PVC plumbing but will require a union and/or other fittings. The feeder comes complete for installation with 2" or 1½" PVC plumbing. Choose a site in the return line where feeder can be installed in a vertical position. Always install as far from any metal equipment as practical since fumes, etc. can corrode them. If optional corrosion resistant check valve is required refer to installation instructions before next step.

**BASIC PLUMBING INSTALLATION INSTRUCTIONS**

**2" OR 1½" PVC PIPE:** If feeder is being installed on a pool, spa or pool/spa combination, correct plumbing procedures must be followed to insure proper flow through feeder. If pool or spa is plumbed with 2" PVC pipe, be certain the pump, filter and heater all have 2" inlet and outlet fittings. If any part of the equipment has less than 2" fittings or pipe, then a minimum of 6" x 1½" reducer bushings must be installed directly into the inlet side of the feeder using the 2" x 1½" reducer bushings supplied. This will build pressure directly into the feeder insuring proper operation. Continue with 2" PVC pipe on the outlet side of the feeder.

**POOL/SPA COMBINATION:** If plumbing and equipment is a full 2" and the feeder is being installed on the pool return line after the diverter valve, with a portion of the water diverted to the spa, install a minimum section of 6" x 1½" PVC pipe directly into the inlet side of the feeder using the 2" x 1½" reducer bushing supplied. Continue with 2" PVC pipe on the outlet side of the feeder. This will compensate for that portion of water being diverted to the spa.

**90° ELBOWS:** Plumbing a 90° elbow directly into the inlet side of the feeder may cause turbulence inside the elbow. This will prevent water from being scooped into the feeder. A minimum of a 6" length of PVC pipe should be installed between the 90° elbow and the inlet side of the feeder.

chemical residual. It is recommended that the chemical residual be checked daily for the first 5 days. Remember . . . hot days, higher water temperature or increased pool/spa activity will cause your pool/spa to use more sanitizer. When possible, increase the feed rate a day or two in advance. Because the chlorine demand in your pool/spa varies and is dependent on many factors (sunlight, bather load, water temperature, etc) your valve setting may have to be changed from time to time to adjust to these conditions. For example, the winter setting may be #2 while the summer setting is #3. Check the chlorine residual daily to find the ideal setting. Note: Higher numbers dispense more chemical. Small gradual changes are imperative for control.

**HOW TO RECHARGE FEEDER**

1. Turn control valve to the closed position. **SHUT OFF PUMP.**
2. Wait one minute. This will allow water and fumes to drain from feeder.
3. Leave control valve closed and turn on pump. The check valve will prevent water from entering the feeder.
4. Remove cap and fill with proper size tablets or sticks. (See Operating Instructions #1)
5. Making sure O-ring is clean, lubricated with Lifegard silicone and is in place, replace cap. Hand tighten only.
6. Open control valve to original setting. Inspect inlet line below control valve each time feeder is recharged. Replace lines yearly if necessary.

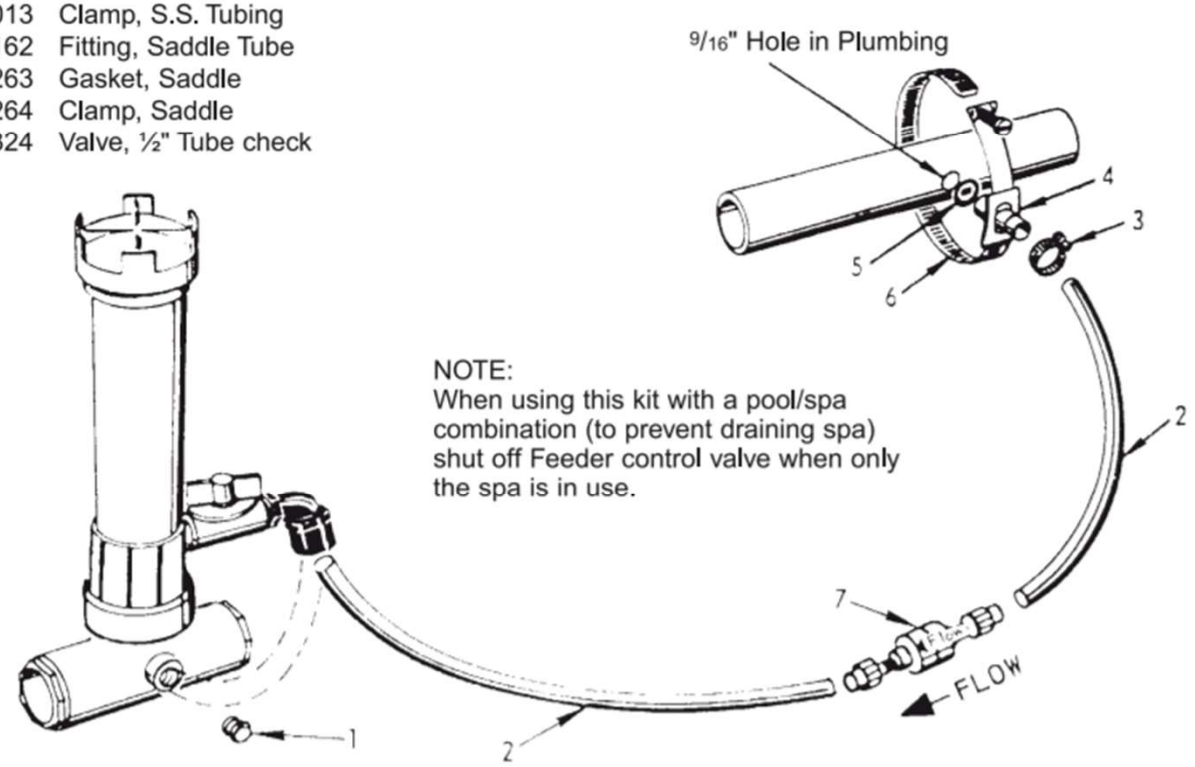
**SPECIAL FEATURES AND INSTRUCTIONS**

If while using 3" diameter tablets the #320 feeder does not provide enough chlorine residual, switch to 1" tablets. The smaller tablet will erode faster producing more chlorine residual. If this does not correct the situation, the #320 has been fitted with an optional opening at the top of the feeder (which is plugged). To accommodate attachment of the valve and tubing assembly for top entry of water into the feeder, an additional length of tubing has been included. The following procedure should only be used if the suggested change has not solved the situation. Top entry in normal situations can cause over chlorination.

1. Turn off pump and timer switches.
2. Remove tubing by unscrewing compression nut at each end of tubing.
3. Remove plug at top of feeder directly above control valve.
4. Remove control valve. If nipple stays in valve, carefully remove by using pliers at the center of nipple. There is no need to remove the 90° tube fittings.
5. Wrapplug with 2 or 3 wraps of threaded tape in opposite direction of tightening. Screw into opening where control valve was attached. Hand tighten plus 2 or 3 turns. Do not overtighten.
6. Wrap threads of nipple with threaded tape. Thread nipple into top opening. Finger tighten only. Thread valve onto nipple. After nipple starts to turn from tightening valve, 2 to 3 more turns is enough. The nipple or valve can be broken by overtightening.
7. Slide compression nut over long section of tube. Slide tube over tapered part of 90° tube fitting and tighten. Hand tighten only. Repeat for other end of tubing.
8. Set control valve to #1. Turn on pump and timers. Check residual daily to determine proper setting. Small gradual changes are imperative for control.

HI FLO FEEDER KIT #R171099
PARTS BREAKDOWN DRAWING

| Item | Quantity | Part No. | Description |
|---|---|---|---|
| 1 | 1 | R172134 | Plug, ½" MPT |
| 2 | 6ft | R172093 | Tube, ½" ID Chlorinator |
| 3 | 1 | R175013 | Clamp, S.S. Tubing |
| 4 | 1 | R171162 | Fitting, Saddle Tube |
| 5 | 1 | R172263 | Gasket, Saddle |
| 6 | 1 | R172264 | Clamp, Saddle |
| 7 | 1 | R172324 | Valve, ½" Tube check |




NOTE:
When using this kit with a pool/spa combination (to prevent draining spa) shut off Feeder control valve when only the spa is in use.

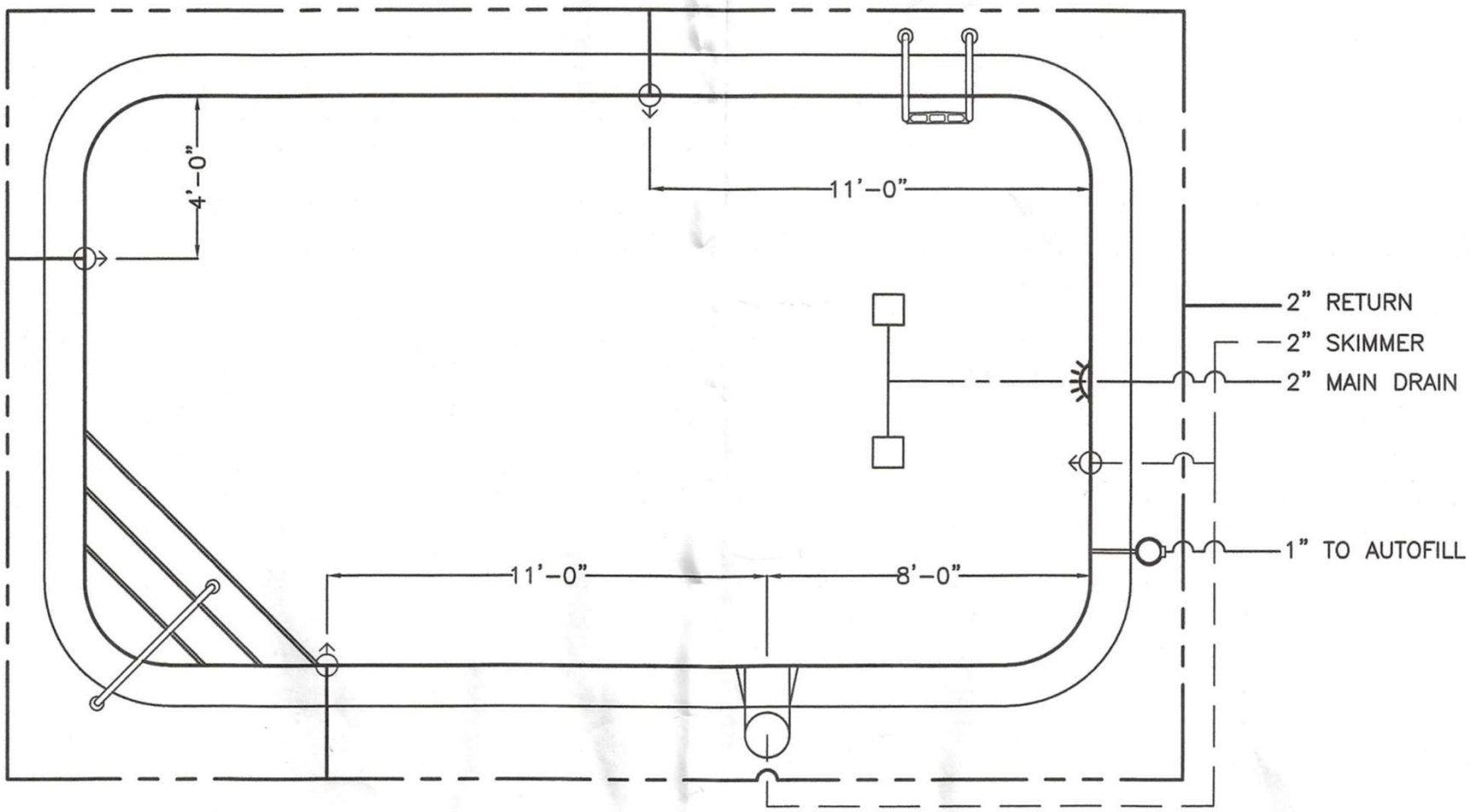
## 17. Vacuum cleaning system provided per .2518(f)

- Note:
- Vacuum ports located on pool wall 6”-<18” below water level. Skimmer vacuums may be used in pools with ≤2 skimmers and negate need for separate vacuum port.
- Vacuum piping, if separate from skimmer operation may be suction or discharge and should be sized according to manufacturer’s requirements.
- Specifics not mentioned in rules.
- Self- closing caps requiring tools to open per .2518 (f)

Port vacuum cover Mfg._____

Model#_____

## Note: no vacuum line shown on plumbing plan




4 / SP1 POOL PLUMBING PLAN
SCALE: 1/4" = 1'-0"

Vacuum line not shown so CPO will vacuum through the skimmer.

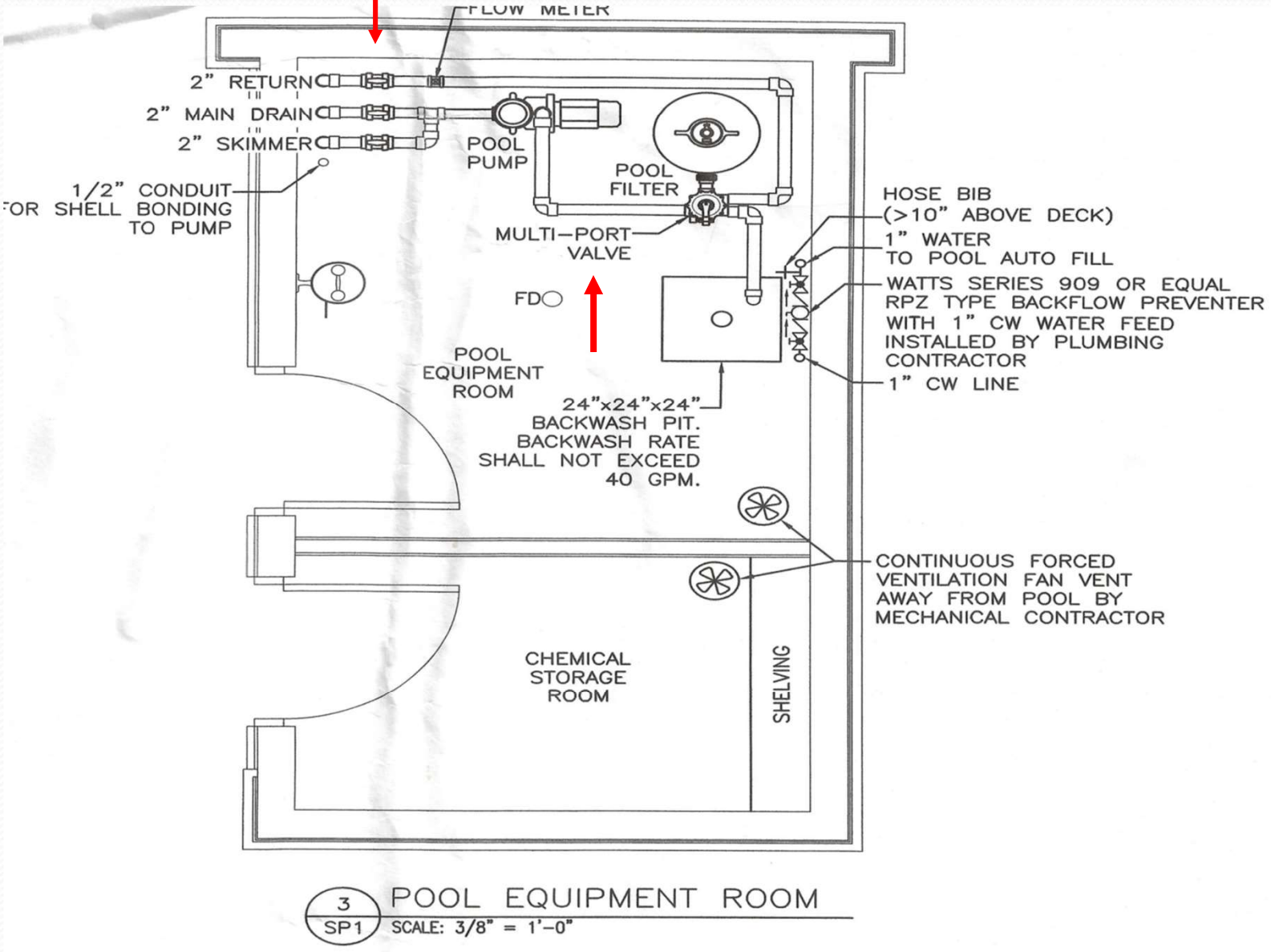
## CLEANING AND SAFETY EQUIPMENT

| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
|---|---|---|---|---|
| 1 | VACUUM HEAD | PENTAIR | R201126 | 19 IN. FLEXIBLE VACUUM HEAD |
| 1 | WALL BRUSH | PENTAIR | R111316 | 18 IN. WHITE POLYPROPYLENE |
| 1 | LEAF SKIMMER | PENTAIR | R121196 | HEAVY DUTY SKIMMER |
| 1 | ADJUSTABLE POLE | PENTAIR | R500070 | 8'–16' ADJUSTABLE POLE |
| 1 | LIFE HOOK | PENTAIR | R221026 | ALUMINUM HOOK WITH HARDWARE SET |
| 1 | UTILITY POLE | PENTAIR | R191106 | 12' STRAIGHT POLE |
| 1 | VACUUM HOSE | ACTION/HAVILAND | NA225 | 1–1/2" x 50 FEET |
| 1 | LIFE RING | CAL–JUNE | GW–24 | 20" USCG APPROVED |
| 1 | THROW LINE | AJ GIAMMANCO | #60 | 1/4" x 50 FEET |
| 1 | TEST KIT | PENTAIR | R151716 | PROFESSIONAL TEST LAB |
| 2 | SIGNS | PENTAIR | R234000 | N.C. POOL RULES SIGN |
| 4 | SIGNS | PENTAIR | R231200 | NO DIVING ALLOWED |
| 2 | SIGN | HAE | SBE | SHOWER BEFORE ENTERING |
| 4 | SIGN | PENTAIR | R230500 | NO LIFEGUARD ON DUTY |
| 2 | SIGN | – | – | NO NIGHT SWIMMING |
| 2 | SIGN | – | R231700 | EMERGENCY TELEPHONE SIGN |

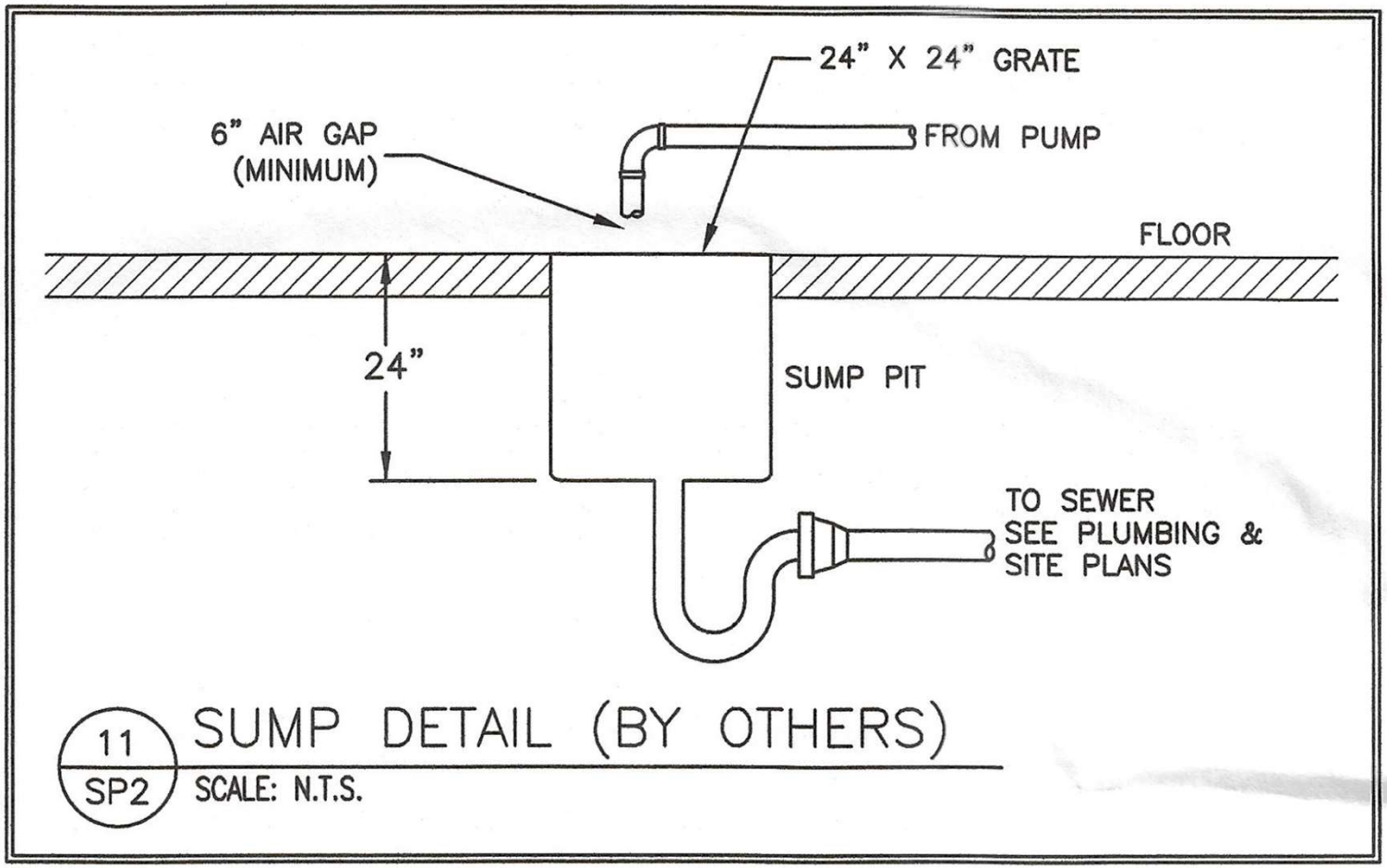
**18. Valves provided to control flow** from drains, surface skimmers or surface overflow systems, and vacuuming cleaning system .2518 (c) and (f)

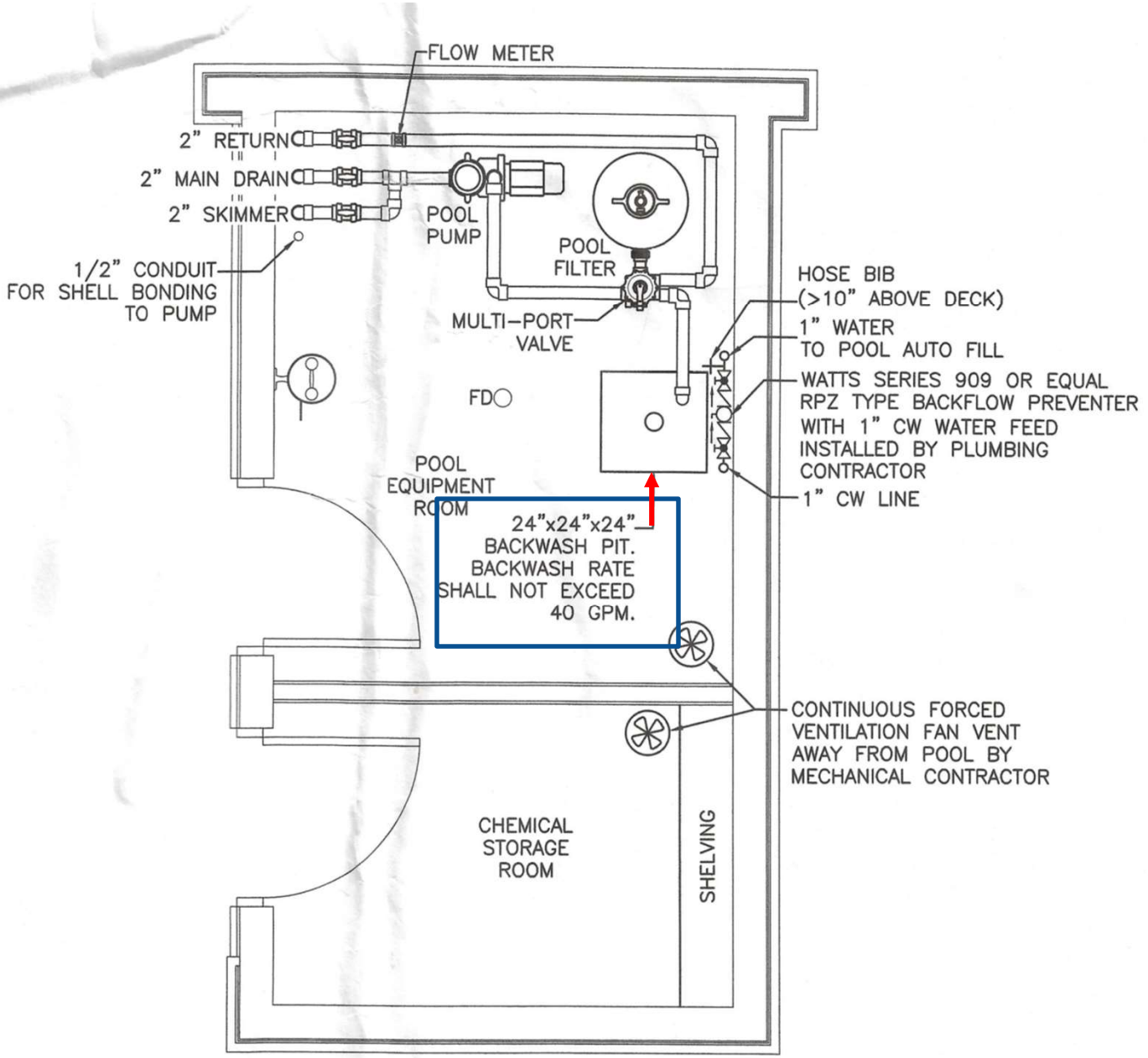
| POOL EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| QTY. | ITEM | MANUFACTURER | MODEL # | DESCRIPTION |
| 1 | PUMP | PENTAIR | WFE–2 | 1/2 HP WHISPER FLO COMMERCIAL PUMP (1 PHASE PUMP) |
| 1 | BASKET | PENTAIR | 070387 | EXTRA STAINER BASKET |
| 1 | FILTER | PENTAIR | TR50 | NSF APPROVED WITH AIR RELIEF PRESSURE GAUGE |
| 1 | VALVE | PENTAIR | 261055 | MULTIPORT VALVE |
| 1 | FLOWMETER | FLOW VIS | FV–C | 2" PVC MOUNT (BACKWASH NOT TO EXCEED 50 GPM) |
| 1 | CHLORINATOR | PENTAIR | 320 | AUTOMATIC EROSION TYPE (PENTAIR #171096) |
| | | | | |

**Valves on each suction and return line plus a multi-port valve required.**



**19. Drainage discharged through air gap** from pool overflow, deck drains and filter backwash per .2513(b)






3/SP1 POOL EQUIPMENT ROOM

SCALE: 3/8" = 1'-0"

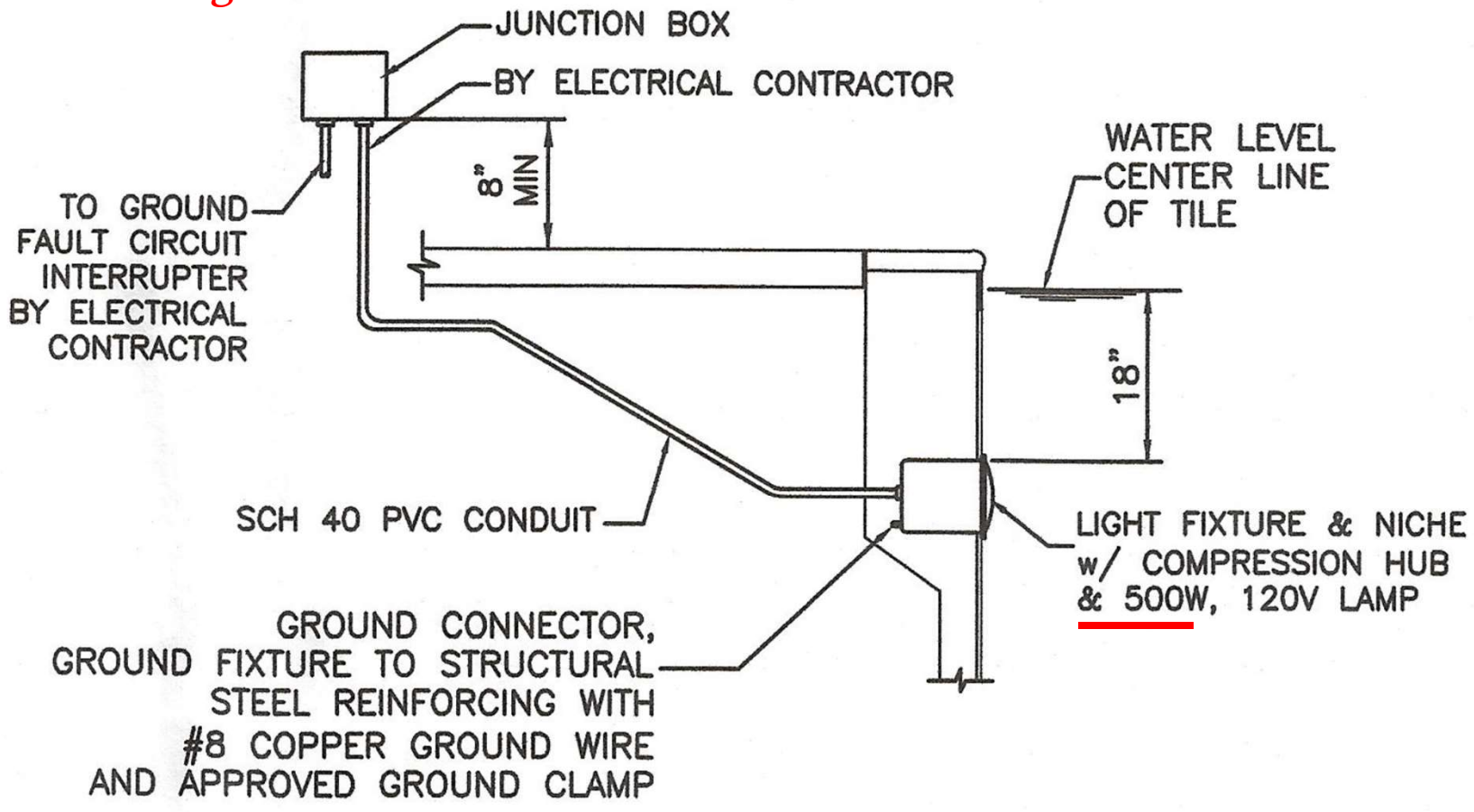
**20. If lighting is provided**: 0.5 watts per SF of pool surface (or lumens as required in rule .2524(d).

Nighttime swimming must meet Session Law 2017-209 and requires a nighttime visit by EHS.

**Pool plan shows 500-watt light**

**350 sq. ft. x 0.5 = 175 watts required, lighting on plan exceeds requirement.**

## 20. Pool Lights




6 / SP2 UNDERWATER LIGHT DETAIL

SCALE: N.T.S.

21. **Minimum deck** width required _____ ft. per .2522 (a) – © & (i) (**Ref #3**)

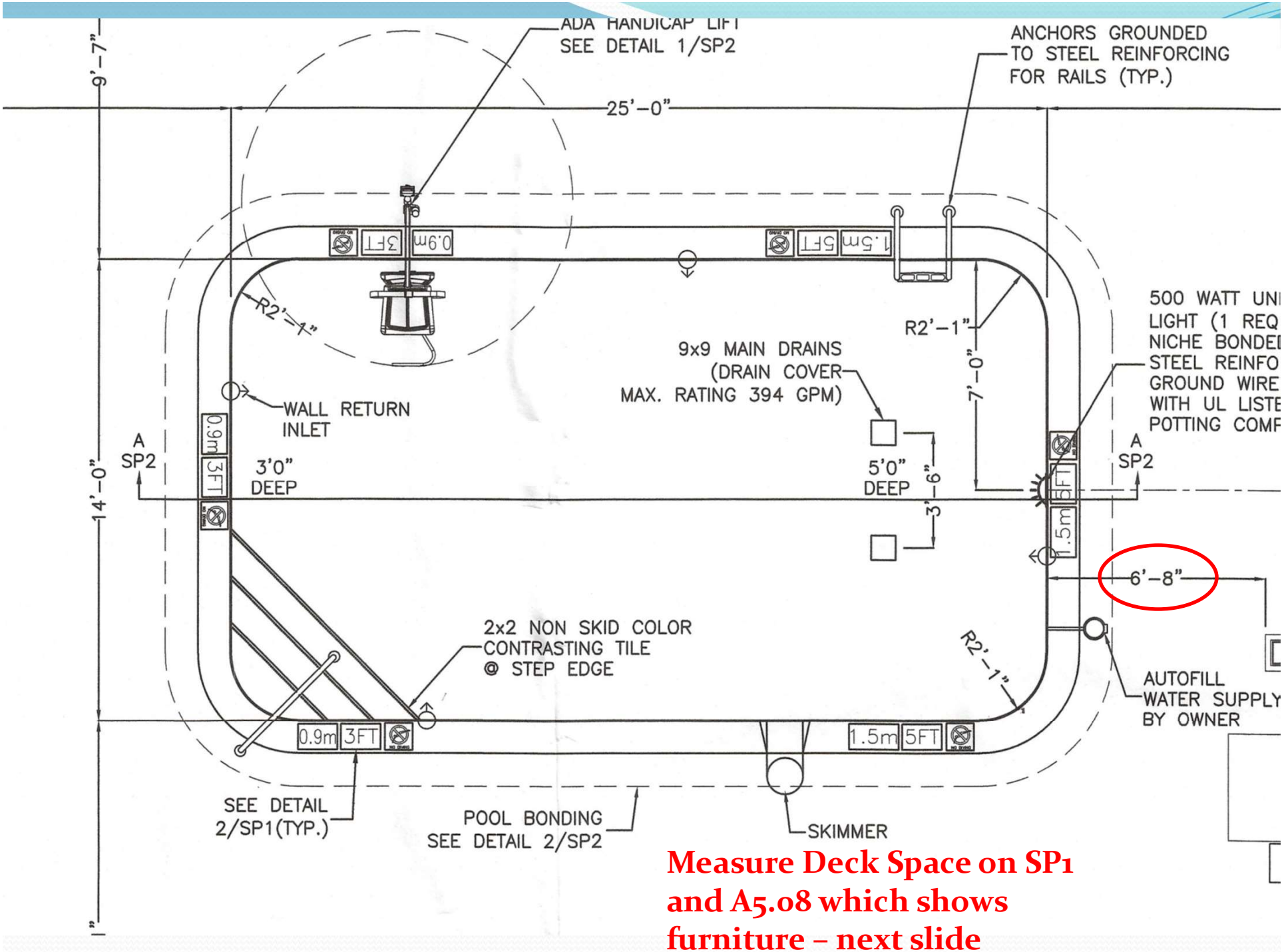
**Minimum Deck Requirements**

| | Outdoor Pool | Indoor Pool | Wading Pool | Spa | Interactive Play | Permanent Structure |
|---|---|---|---|---|---|---|
| Deck Clearance | < 1600 sf = 6 ft<br>> 1600sf = 8 ft | 5 ft | 4 ft | 4 ft at least ½ around | Not Required | 5 ft around diving board, handrail, slide, or other permanent structure |
| Vertical Clearance | NA | 7 ft | 7 ft | 7 ft | Not Required | 13 ft above board<br>See Rule .2517 |

.2522 (a-e, i), .2543 (10), Special purpose pools such as waterslides and wave pools may vary from the minimum requirements to accommodate feat
ADA Chairs – NC Building Code enforced. New constructed pools over 300' perimeter may be required 2 access entries (lift and ramp). Lifts are per
infringe on pool decks but cannot block emergency egress corridors required for fire safety. Deck slope to drain ¼ to ½"/ft; slip resistant.

**Minimum deck width required is 6 FT. because pool surface area is < 1600 sf**

**SP1 shows sufficient deck space**

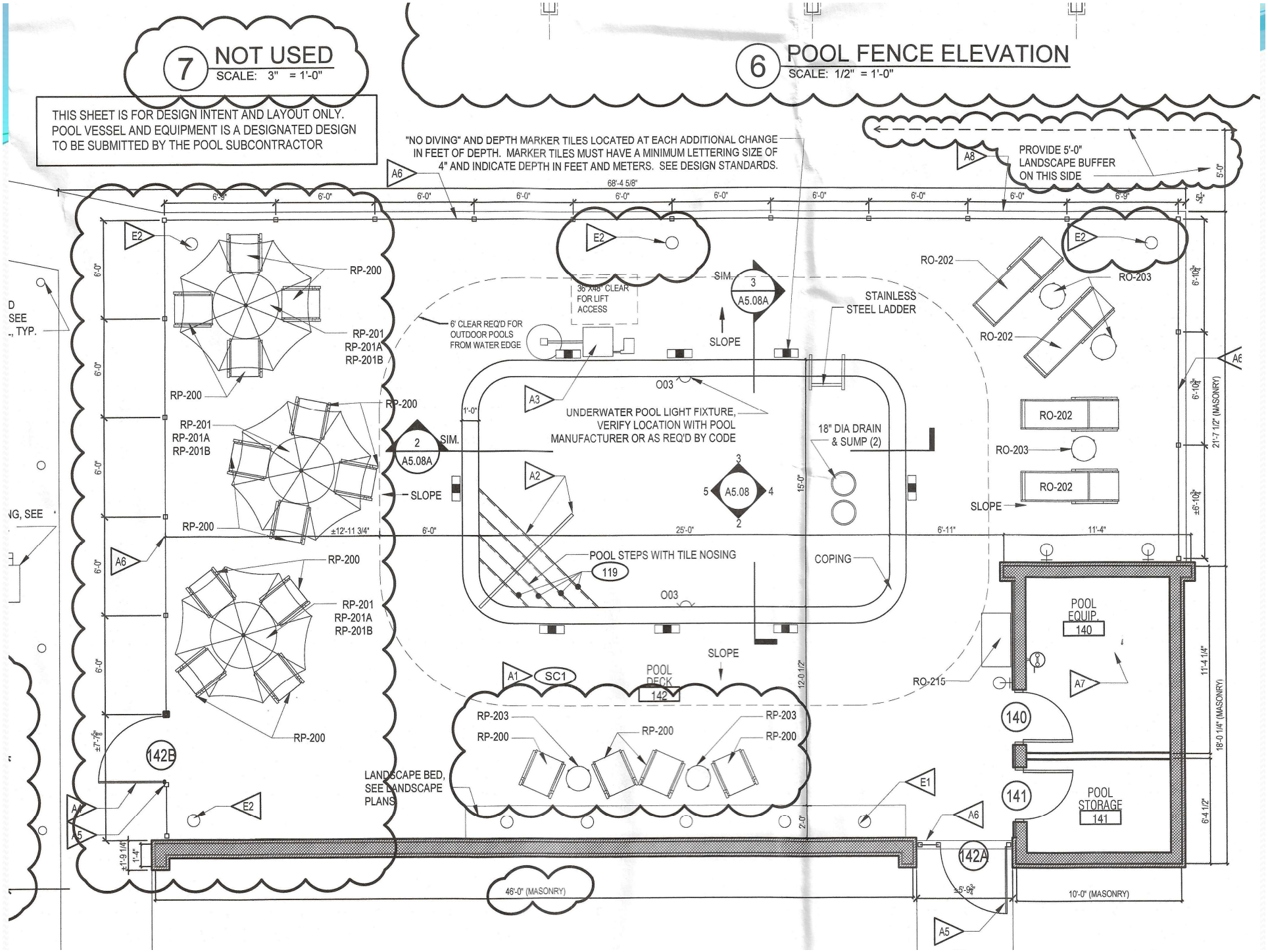



**Measure Deck Space on SP1 and A5.08 which shows furniture – next slide**

## 7 NOT USED
SCALE: 3" = 1'-0"

THIS SHEET IS FOR DESIGN INTENT AND LAYOUT ONLY.
POOL VESSEL AND EQUIPMENT IS A DESIGNATED DESIGN
TO BE SUBMITTED BY THE POOL SUBCONTRACTOR

## 6 POOL FENCE ELEVATION
SCALE: 1/2" = 1'-0"



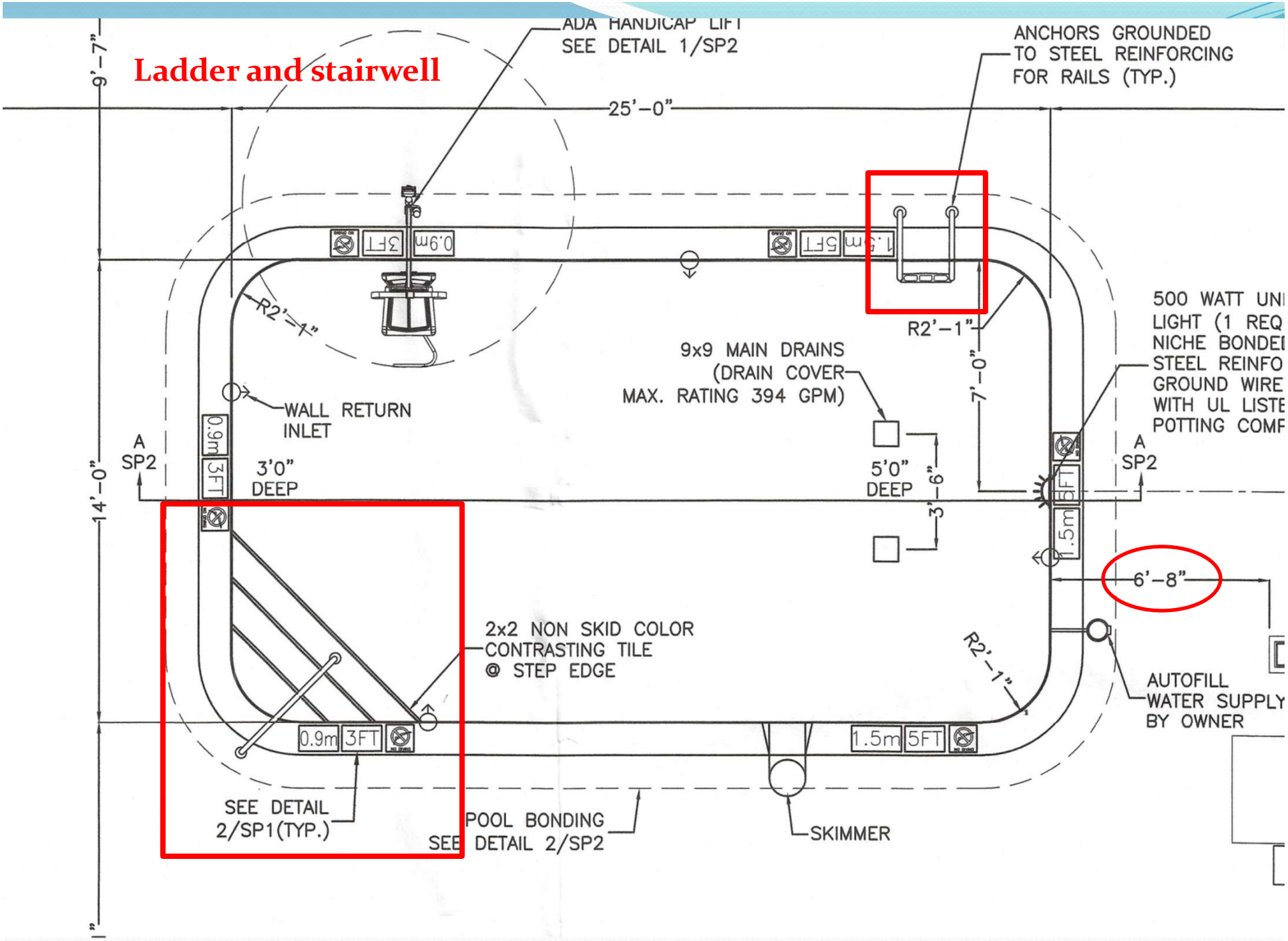
**22. Ladders, steps, stairs, handrails** required _____, Plan shows _____

Notes:

- If >2’ deep, 1 in shallow; 1 in shallow & deepest, every 75’.
- If pool width > 30 ft, 2 ladders are required on either side of the deep end.
- Total # of Ladders/ Handrails Required = Perimeter ÷ 75 ft along *shallow* (5’ depth of perimeter. Subtract one if steps present in shallow end)

## Need 1 in shallow and 1 in deep

SP1 show a set of stairs in the shallow end and a ladder in the deep end


Ladder and stairwell
ADA HANDICAP LIFT
SEE DETAIL 1/SP2
ANCHORS GROUNDED
TO STEEL REINFORCING
FOR RAILS (TYP.)
25'-0"
9'-7"
14'-0"
1"
R2'-1"
R2'-1"
9x9 MAIN DRAINS
(DRAIN COVER
MAX. RATING 394 GPM)
7'-0"
500 WATT UNI
LIGHT (1 REQ
NICHE BONDEI
STEEL REINFO
GROUND WIRE
WITH UL LISTE
POTTING COMF
WALL RETURN
INLET
A
SP2
3'0"
DEEP
5'0"
DEEP
3'-6"
A
SP2
0.9m
3FT
1.5m
5FT
6'-8"
2x2 NON SKID COLOR
CONTRASTING TILE
@ STEP EDGE
R2'-1"
AUTOFILL
WATER SUPPLY
BY OWNER
SEE DETAIL
2/SP1(TYP.)
POOL BONDING
SEE DETAIL 2/SP2
SKIMMER

23. **Pool bather load** _____ (Pool surface area (**Ref #3**) ÷ applicable # in chart below and round down) **POOL DEPTH(s)** _____

| | |
|---|---|
| Portion of Pools <5 ft | **15**sf/person per .2529(1) |
| Portion of Pools >5 ft (-300sqft at diving boards) | **24**sf/person per .2529(2) |
| Spas, wading pools, CAP | **10**sf/person per .2529(3) &.2531(a)(8) |
| Interactive play attraction splash zone | **25**sf/person per .2529(4) |

**346sf/15sf per person = 23 people**

**Pool Specifications shows bather load is 23 persons on SP1**

# POOL SPECIFICATIONS

- WATER SURFACE AREA IS 346 SQ. FT.
- WATER DEPTH IS 3'-0" TO 5'-0"
- NET CAPACITY IS 10,366 GALLONS WITH A FILTRATION CYCLE OF 5 HOURS AND 24 MIN AT A FLOW OF 32 GPM. (BASED ON A DYNAMIC HEAD OF 65 FEET)
- POOL PERIMETER = 74.5 LN. FT
- ALL PIPE WORK SHALL BE SCHEDULE 40 PVC, PRESSURE TESTED BEFORE PLACING CONCRETE
- BATHER LOAD IS 23 PERSONS AS PER GS 15A:18A SECTION 2529
- DECK AREA = 1,787 SQ. FT. BY OTHER THAN SPC

**Found on page SP1**

24. **Restroom fixtures based on bather load.** (.2526) Use chart for bath houses for male/ female facilities. At hotel, motel, condo or apartment complex where the farthest unit is more than 300' from the pool as measured along walkways, only a toilet and lavatory are required.

Divide Ref #12 equally between men and women.

| Men | Toilet | Lavatory | Urinal | Showers | Women | Toilet | Lavatory | Showers |
|---|---|---|---|---|---|---|---|---|
| 0-50 | 1 | 1 | 0 | 1 | 0-50 | 1 | 1 | 1 |
| 51-100 | 1 | 1 | 1 | 1 | 51-100 | 2 | 2 | 1 |
| 101-200 | 2 | 2 | 2 | 1 | 101-200 | 3 | 3 | 1 |
| 201-300 | 2 | 2 | 2 | 2 | 201-300 | 4 | 4 | 2 |
| 301-400 | 3 | 3 | 3 | 2 | 301-400 | 5 | 5 | 2 |
| 401-500 | 3 | 3 | 3 | 3 | 401-500 | 6 | 6 | 3 |
| 501-750 | 5 | 5 | 5 | 3 | 501-750 | 8 | 7 | 3 |

*If rinse showers are located on pool deck, 1 per every 200 bathers

*Shower drains are enforced by the building codes department. Typically, showers in bathhouses drain to sewer and cold-water showers on pool decks drain to the deck drains.

**With a bather load of 23, 1 toilet 1 lavatory and 1 shower would be required for both men and women.**

# Bathroom facilities

## GENERAL NOTES

* FLOOR DRAIN, BACKWASH SUMP, APPROVED MUNICIPAL WATER SUPPLY, CONCRETE DECK AND ELECTRICAL SHALL BE PROVIDED BY THE GENERAL CONTRACTOR AND OR OWNER.
* CHEMICAL STORAGE ROOM MUST BE PROVIDED TO MEET STATE REGULATIONS IN DETAILED SPECIFICATIONS.
* A HOSE BIB WITHIN 100' OF ALL DECK AREAS SHALL BE PROVIDED BY OTHERS.
* ALL SIGNAGE TO MEET N.C. G.S. WILL BE PROVIDED.
* SAFETY EQUIPMENT WILL BE STORED ON FENCE.
* POOL SUPPLY WATER WILL BE SUPPLIED THROUGH AN AUTOFILL.
* BATHROOM FACILITIES SHALL HAVE A SLIP RESISTANT FLOOR & HAVE A MIN. OF: MEN'S 1 LAV., AND 1 WATER CLOSET. WOMEN'S 2 LAV'S., 2 WATER CLOSET.
* EMERGENCY PHONE SHALL BE PROVIDED IN DECK AREA WITHIN 75 FEET OF BATHER ENTRANCE..

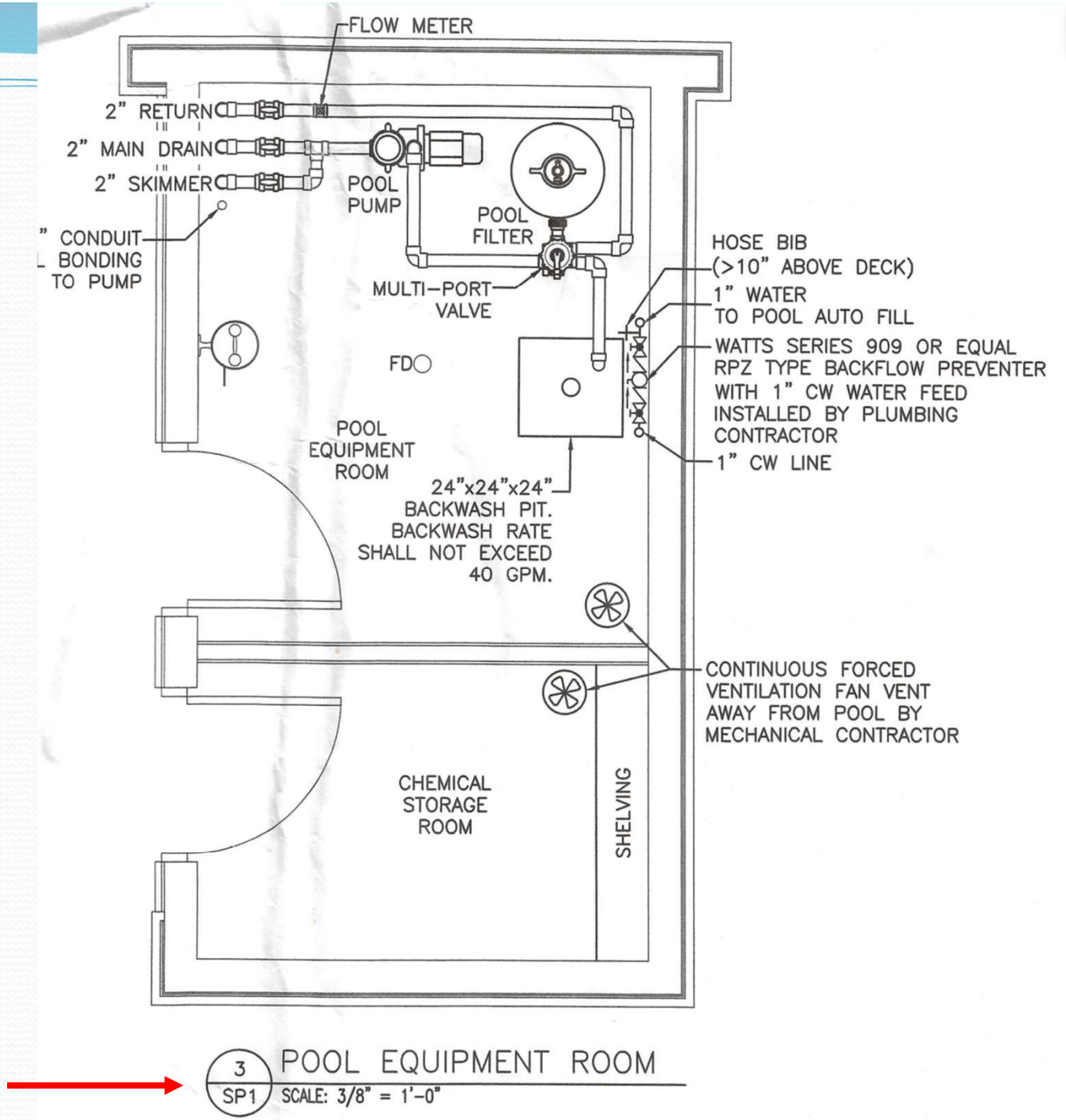
1 extra water closet and lavatory for the women's restroom. What about shower?

25. **Chemical storage room** minimum size: _____ sf
Rules require a min 5sf for 10,000 gallons + 1sf for each additional 3000 gallons
(REF #4) PLAN _____ SF

| | | |
|---|---|---|
| | **10,366** | |
| - | **10,000 g** | **5 SF** |
| = | **366 g** | **1 SF** |
| | | **6 SF** **required minimum chemical storage** |

Plan shows ? SF of chemical storage space.

**Use architect's scale to measure chemical storage room dimensions.**



**Numbers 26 - 33 on the calculation sheet deal with water features such as deck jets, fountains, and hydrotherapy . None are part of this pool design so these items don't apply.**

# Questions?